Environment Canada
Conservation and Protection

Environnement Canada
Conservation et Protection

Inland Waters Directorate

Western and Northern Region

Direction générale des eaux intérieures

Région de l'ouest et du nord

CANADA – SASKATCHEWAN
MEMORANDUM OF AGREEMENT
FOR
WATER QUANTITY SURVEYS
ANNUAL REPORT 1988 - 1989

September, 1989

89-06427/

TO: Mr. D.L. MacLeod
Administrator for Saskatchewan

Mr. R.A. Halliday
Administrator for Canada

In accordance with Article XII of the Memorandum of Agreement for Water Quantity Surveys in the Province of Saskatchewan, signed February 18, 1975, we submit herewith the annual report for fiscal year 1988-89.

Saskatchewan	Canada
A. B. Banga	R. G. Boals
Saskatchewan Water Corporation	Environment Canada

Members
Saskatchewan Co-ordinating Committee

August, 1989

Regina, Saskatchewan

EXECUTIVE SUMMARY

The Canada-Saskatchewan Co-ordinating Committee met twice during the report year to discuss program activities. The items discussed included: financial status and outlook; sediment program activities; hydrometric network planning; WRB publication policy; monitoring of the proposed Rafferty Dam stations; and the hydrometric construction program.

The 1988-89 hydrometric data collection program was completed as planned following generally low spring runoff in 1988. Near-record flows were recorded in the Swan River and Rosetown areas from isolated heavy summer rains. Hydrometric computations for 1987 were completed ahead of schedule.

A cooperative venture was initiated with Parks Canada to monitor three lakes and the Kingsmere River in Prince Albert National Park. Detailed sediment sampling, and morphological surveys were also completed for the Kingsmere River as part of a fish spawning study.

Considerable progress was made in completing training packages for new technicians as part of a national Water Resources Branch initiative. Additional staff training was provided in safe operation of cableways, water safety, instrumentation and technical report writing.

An exchange of technical staff was completed with the Guelph office of the Water Resources Branch. The two-week exchange provided an opportunity to familiarize each office with the techniques and problems encountered in each geographcial setting. Future exchanges with other offices are being considered.

Hydrometric and sediment network planning activities continued during the year. A network planning report was prepared during the year by an external consultant. Future Saskatchewan network planning activities will be determined in part by the recommendations contained in this report.

Two new steamflow stations were constructed during the year in northern Saskatchewan at the request of the Saskatchewan Power Corporation (SPC). Three stations were established in the Frenchman River basin to evaluate natural flow computations in the Val Marie area. Maintenance or upgrading was completed at an additional 70 locations. Construction expenditures during 1988-89 were $89 746 (federal) and $100 272 (provincial). This included $60 851 for work done on behalf of Saskatchewan Power Corporation.

The federal share of 1988-89 program costs was $851 181; the provincial share was $531 882. A provincial deficit carry-over of $9 052 from 1987-88, credit for a network planning contract ($8 000) and a 1988-89 payment of $502 052 results in a provincial deficit of $30 882 for 1987-88 operations. This deficit will be reduced in 1989-90 by $24 851 which represents an underpayment for construction work done in 1988-89 on behalf of the Saskatchewan Power Corporation. The Schedule D costs for the 1989-90 fiscal year are estimated at $494 000.

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1.0 INTRODUCTION

This is the fourteenth annual report summarizing the activities of the Canada-Saskatchewan Co-ordinating Committee established by the Memorandum of Agreement for Water Quantity Surveys in 1975. The Agreement, along with Schedules A, B, C and D which detail operational, administrative and cost-sharing arrangements, is included as Appendix D. The report contains brief summaries of the two Co-ordinating Committee meetings convened during the fiscal year ending March 31, 1989 as well as a summary of surface water conditions, hydrometric operations, construction activities and hydrometric network changes which occurred during the year.

Details of the cost-sharing arrangements for 1988-89 are provided in the report. The federal share of 1988-89 program costs was $851 181; the provincial share was $531 882. A provincial deficit carry-over of $9 052 from 1987-88, credit for a network planning contract ($8 000) and a 1988-89 payment of $502 052 results in a provincial deficit of $30 882 for 1988-89 operations. The costs for the 1989-90 fiscal year are estimated at $494 000 in Schedule D.

2.0 SUMMARY OF ACTIVITIES

2.1 CANADA-SASKATCHEWAN CO-ORDINATING COMMITTEE MEETINGS

The Canada-Saskatchewan Co-ordinating Committee met twice during the report year, on September 16, 1988 and on March 16, 1989 to discuss routine and specific issues of mutual interest. The highlights are summarized in the following sections.

2.1.1 Co-ordinators' Meeting - September 16, 1988

The meeting was attended by Mr. A.B. Banga, the member for Saskatchewan, Mr. R.G. Boals the member for Canada, Mr. D. Euteneier, Saskatchewan Water Corporation, Mr. D. Truelove, Saskatchewan Water Corporation, Mr. R. Herrington, Water Resources Branch (WRB) and Mr. B.N. Johnson, WRB.

The financial status for 1988-89 and the outlook for the next fiscal year were discussed at this meeting. It was estimated that Schedule D for 1989-90 would be $486 000.

The 1988-89 sediment and hydrometric program activities were highlighted. These included the sediment station analysis contract for the Saskatoon station, the joint WRB/Parks program on the Kingsmere River, the Qu'Appelle River morphological contract (Phase II) and the national sediment meeting scheduled for Calgary on September 29-30, 1988.

Network planning activities were discussed with reference to a consultant proposal. The proposal was considered to be a general overview of network requirements in the province. A more detailed review by drainage basin would be undertaken in a follow-up study.

The proposed WRB publication policy for hydrometric data was discussed. It was stated that WRB Saskatchewan will be the only province providing data on microfiche in the future.

Changes to Schedule A for the next fiscal year and monitoring requirements of the proposed Rafferty Dam were also discussed.

2.1.2 Co-ordinators' Meeting - March 16, 1989

The meeting was attended by Mr. A.B. Banga, the member for Saskatchewan, Mr. R.G. Boals, the member for Canada, Mr. D. Euteneier, Saskatchewan Water Corporation, Mr. D. Truelove, Saskatchewan Water Corporation, Mr. R. Herrington, WRB, and Mr. B.N. Johnson, WRB.

The 1988-89 constuction program costs were reviewed and priorities were assigned to the 1989-90 construction program. It was expected that approximately $12 000 would be available for maintenance of the provincial network in 1989-90.

The proposed monitoring stations for the Rafferty Dam were also discussed. It was indicated that construction of these stations would be funded separately from Schedule D.

Discussion of the sediment program included the proposed formation of a Saskatchewan Sediment Technical Advisory Committee in 1989, the 1989 sediment monitoring program, the 1989 proposed Hydraulic and Morphologic Workshop, the Sediment Program Management System used by WRB and future Sediment Station Analysis reports.

It was reported that the network planning report being prepared by a consultant would be finalized by the end of the fiscal year. Future Saskatchewan network planning activities will be determined in part by the recommendations contained in this report.

Changes to Schedule A for the next fiscal year include two provincial stations and six federal stations.

It was noted that WRB Saskatchewan was reviewing the DCP and Telemark networks in the province. A report would be prepared outlining recommendations for future real-time data networks.

Schedule D for 1989-90 was estimated at $457 000 for operations (include $1 000 for the sediment program) and $37 000 for constuction. It was stated that the increase in O&M budget over 1988-89 should offset the expected salary package currently being negotiated with hydrometric staff.

2.2 OPERATIONAL CONSIDERATIONS

2.2.1 Surface Water Conditions

Spring runoff volumes in 1988 were generally below normal throughout most of Saskatchewan. Many streams in the south recorded no runoff; most of those streams recording runoff peaked by mid-March. The only area of the province to record significant spring runoff was the Yorkton - Kamsack region.

Much of Saskatchewan experienced drought conditions during 1988 with June being particularly hot. In spite of generally low runoff, however, some areas experienced significiant runoff during the year due to heavy rains. Flows for the Swan River were almost the highest recorded during May and Creighton Tributary in the Rosetown area recorded the second highest flow on record due to heavy rains in August.

2.2.2 Hydrometric Operations

Data computations and hydrometric field work were completed as scheduled during the year. Additional field work was required to monitor high flows in the Swan River and Rosetown areas. A special field program was undertaken to monitor flows on the Reindeer River to assist in defining the stage-discharge relation.

A cooperative venture was initiated with Parks Canada to monitor three lakes and the Kingsmere River in Prince Albert National Park. Detailed sediment sampling and morphological surveys were also completed for the Kingsmere River as part of a fish spawning study.

Considerable progress was made in completing training packages for new technicians as part of a national Water Resources Branch initiative. Additional staff training was provided in safe operation of cableways, water safety, instrumentation and technical report writing.

An exchange of technical staff was completed with the Guelph office of the Water Resources Branch. The two-week exchange provided an opportunity to familiarize each office with the techniques and problems encountered in each geographical setting. Future exchanges with other offices are being considered.

2.2.3 Construction Activities

Seventy-five construction projects were completed during the fiscal year. The majority of these projects involved maintenance and upgrading activities designed to improve record quality and to reduce the associated effort and cost. Maintenance was carried out at 61 stations while station upgrading occurred at an additional 9 sites. Two new streamflow stations were constructed in northern Saskatchewan at the request of the Saskatchewan Power Corporation. Three stations were established in the Frenchman River basin to evaluate natural flow computations in the Val Marie area.

The total cost of the 1988-89 construction program was $200 018. The provincial share of the cost was $110 272 and the federal share was $89 746. Details of the construction program are documented in the 1988-89 Saskatchewan Construction, Upgrading and Maintenance Annual Report.

2.3 NETWORK DEVELOPMENT

2.3.1 Network changes for 1988-89

Schedule A of the Memorandum of Agreement identifies the operational and financial responsibility for hydrometric stations that comprise the water quantity network and are active on April 1 of each year. The Schedule also shows the type of data collected (flow, water level, sediment) and the period of operation (seasonal or annual). Decisions regarding changes to the Schedule are made by the Co-ordinating Committee with reference to the national designation guidelines for station classification. Network changes as of April 1, 1988 are shown in Figure 1 and summarized as follows:

STATIONS DELETED FROM THE NETWORK

	Station Name	Station Number	Record	Designation
1.	Page Creek near Iffley	05EG008	8Q	P1
2.	Snipe Lake near Eston	05HC002	8L	P1
3.	Van Pattens Creek near Kuroki	05MB011	8Q	P1
4.	Willows Coulee Reservoir near Assiniboia	05JD005	8L	P2
5.	Reindeer River at Outlet of Reindeer Lake	06DB002	12Q	*
6.	Birch River Marsh near Cumberland House	05KH014	12L	**

* Data formerly contributed by Saskatchewan
** Station formerly operated by Ducks Unlimited

STATION DESIGNATION CHANGES

	Station Name	Station Number	Record	From	To
1.	Reindeer River above Devil Rapids	06DD002	12Q	P2	F2

STATION NAME CHANGES

	Station Name	Station Number	To
1.	Waterfound River below Unknown Lake	05LB002	Waterfound River below Therian Lake

2.3.2 Network Development in Saskatchewan

The historical development of the Saskatchewan hydrometric network and the annual increase in the streamflow data base are shown in Figures 2 to 4. These figures illustrate the rapid increase in the acquisition of hydrometric data since the 1950s and the relative stability of the network during the last twenty years.

Although the number of hydrometric stations operated within Saskatchewan has been relatively constant, network planning is not dormant. Changes to the network from the inception of the cost-sharing agreement are well illustrated in the following:

Year	Stations Added*	Stations Deleted*
1975-76	52	6
1976-77	11	4
1977-78	6	8
1978-79	10	3
1979-80	0	1
1980-81	3	11
1981-82	2	2
1982-83	1	3
1983-84	22	1
1984-85	0	0
1985-86	2	0
1986-87	2	8
1987-88	3	10
1988-89	0	4
Total	114	64

* Includes all stations from Schedule A other than contributed data.

FIGURE 1

Network changes effective April 1, 1988

Stations deleted = ●

DEVELOPMENT OF THE HYDROMETRIC NETWORK

IN SASKATCHEWAN

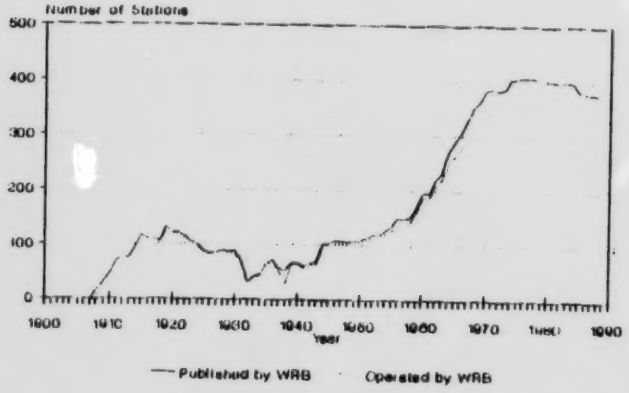

Figure 2

DEVELOPMENT OF THE HYDROMETRIC NETWORK

IN SASKATCHEWAN OPERATED BY WRB

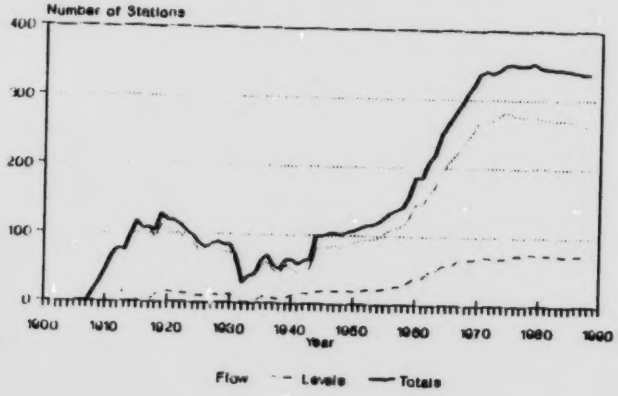

Figure 3

CUMULATIVE STATION YEARS

OF HYDROMETRIC DATA IN SASKATCHEWAN

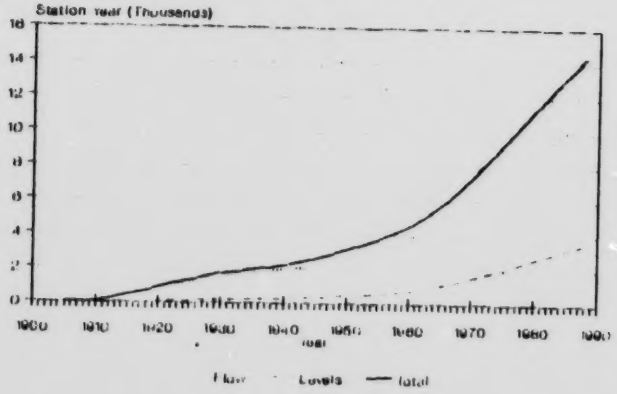

Figure 4

The stations added to Schedule A over this period represent approximately 36% of the hydrometric network operated by WRB and Sask Water as of April 1, 1988, and the stations deleted from the Schedule represent 20% of the network.

In addition to the 178 stations which have been added to or deleted from the network, many station designation changes have also occurred during the period. In general, there has been a significant decrease in the number of federal stations and a large increase in provincial stations. The federal stations represented 52% of the total network in 1975-76 and 39% in 1988-89 while the provincial category represented 16% in 1975-76 and 26% in 1988-89. Figure 5 illustrates the changing nature of designated responsibility of the hydrometric network operated by WRB since the inception of the cost-sharing agreement.

HISTORY OF ACTIVE HYDROMETRIC
STATIONS OPERATED BY
WRB SASKATCHEWAN SINCE 1975

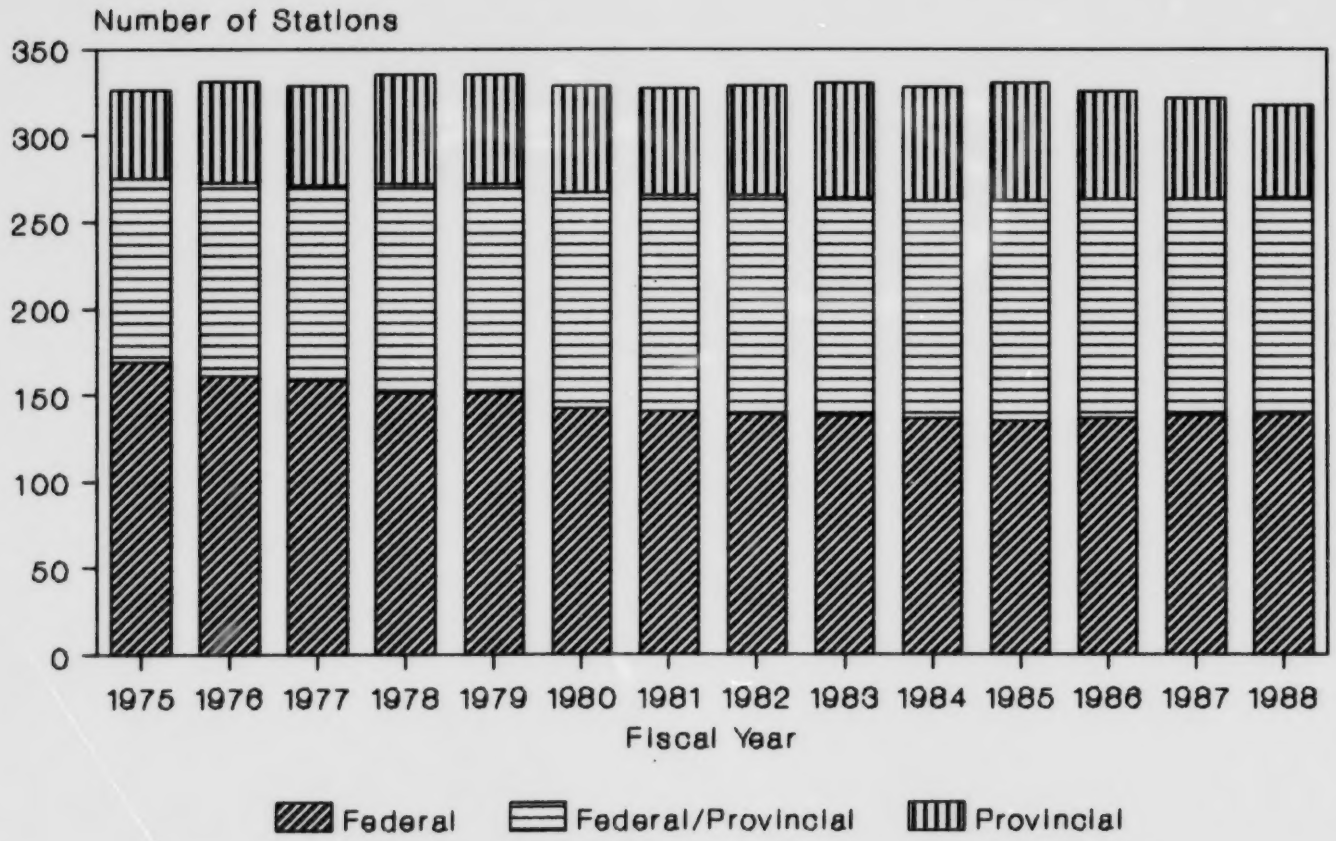

Figure 5

3.0 COST OF OPERATION

3.1 DERIVATION OF STATION UNITS

The calculation of station units (Table 1) is derived from Schedule A of the Memorandum of Agreement which lists the hydrometric network stations existing and operating as of April 1, 1988. Provincial stations operated by Sask Water and published by WRB are not considered as these stations are not included for costing purposes (Memorandum of Agreement, Article V (b)).

Total operational costs of hydrometric stations vary significantly with the period of operation (seasonal or annual) and with the type of data produced (water level only or water level and flow). Weighting factors to account for these differences and to convert stations to station units have been assigned as follows:

8 month water level station (8L) = 0.25
12 month water level station (12L) = 0.40

8 month flow station (8Q) = 0.75
12 month flow station (12Q) = 1.00

These factors apply to normal, remote and international stations and are used by the four WRB offices within the Inland Waters Directorate, Western & Northern Region.

3.2 COST OF OPERATION: 1988-89

Station unit costs and total network costs for salary, operations and maintenance, and capital for 1988-89 are derived from the detailed program costs incorporated in Appendix A and are summarized in Table 2.

TABLE 1

SASKATCHEWAN WATER QUANTITY PROGRAM
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1988-1989

CLASSIFICATION	TYPE*	NO. of STATIONS**	CONVERSION	UNITS
Federal				
Remote Access	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	13	1.00	13.00
		16		14.20
Normal Access	8L	8	0.25	2.00
	12L	11	0.40	4.40
	8Q	18	0.75	13.50
	12Q	23	1.00	23.00
		60		42.90
International	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	36	0.75	27.00
	12Q	8	1.00	8.00
		63		40.35
Total		139		97.45
Federal-Provincial				
Remote Access	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
		18		16.20
Normal Access	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	85	0.75	63.75
	12Q	15	1.00	15.00
		107		81.25
Total		125		97.45

continued.....

TABLE 1 (concluded)

Page #2

CLASSIFICATION	TYPE*	NO. of STATIONS**	CONVERSION	UNITS
Provincial				
Remote Access	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	2	1.00	2.00
		2		2.00
Normal Access	8L	10	0.25	2.50
	12L	2	0.40	0.80
	8Q	38	0.75	28.50
	12Q	1	1.00	1.00
		51		32.80
Total		53		34.80
Grand Total		317		229.70

* 8L - 8 month water level station
12L - 12 month water level station
8Q - 8 month flow station
12Q - 12 month flow station

** From Schedule A

TABLE 2

SASKATCHEWAN WATER QUANTITY PROGRAM
COST SUMMARY 1988-1989

Unit Cost Summary

STATION CLASSIFICATION	UNIT	SALARY $	OPERATIONS $	CAPITAL $	TOTAL $
1. Normal Access					
- Non-International	1.0	2783	1397	432	4612
- International	1.0	3478	873	432	4783
2. Remote Access	1.0	2783	5001	432	8216

Total Cost Summary

STATION CLASSIFICATION	NO. OF STATIONS	UNITS	SALARY $	OPERATIONS $	CAPITAL $	TOTAL $
Federal						
Remote	16	14.20	39 512	71 013	6 138	116 663
Normal						
- Non-International	60	42.90	119 370	59 939	18 543	197 852
- International	63	40.35	140 348	35 223	17 441	193 012
						507 527
Federal-Provincial						
Remote	18	16.20	45 077	81 015	7 002	133 094
Normal	107	81.25	226 079	113 522	35 120	374 721
						507 815
Provincial						
Remote	2	2.00	5 565	10 002	865	16 432
Normal	51	32.80	91 226	45 828	14 177	151 271
						167 703
Grand Total	317	229.70	667 217	416 542	99 286	1 183 045

Overall hydrometric salary costs for 1988-89 remained virtually unchanged from the previous fiscal year as no new contract settlement was reached with hydrometric staff. The person-year utilization was slightly lower than in the previous year. The unit salary cost for remote and international stations declined because revised salary cost factors were used this year (see Section 4.2). This resulted in a small decrease in remote salary dollars and a more significant decrease in international salary unit costs.

Total shareable program operations and maintenance costs were slightly higher in 1988-89 compared to the previous fiscal year. Small increases in Professional Services, Temporary Help Services, Purchased Repairs, Purchased Materials and Parts and Consumable Tools were experienced. The Rentals category increased significantly due to the requirement for additional aircraft charter time for the biennial remote propane resupply trip. A charge for current meter maintenance was levied in 1988-89; this was not required in the previous year as current meter parts were not ordered.

Unit operating costs for normal access hydrometric stations increased slightly this year due to a combination of higher costs and a decrease in station units. A slight increase in unit operating costs was experienced for both remote and international stations due to higher operating costs and no changes in station units from the previous year.

Table 3 and Figure 6 summarize the Saskatchewan water quantity surveys program shared costs for 1988-89. The total federal share was $851 181 while the total provincial share was $531 882. The provincial deficit from 1987-88 of $9 052, credit for a network planning contract ($8 000) and the provincial payment for 1988-89 of $502 052 results in a provincial deficit for 1988-89 operations of $30 882. This deficit will be reduced in 1989-90 by $24 851 which represents an underpayment for construction work done in 1988-89 on behalf of Saskatchewan Power Corporation.

Table 4 and Figures 7 to 9 show the change (increase) in station unit costs since the implementation of the cost sharing agreement in 1975.

3.3 COST ESTIMATES: 1989-90

Changes affecting the 1989-90 Schedule A and the computation of the 1989-90 Schedule D estimate of $519 000, are contained in Appendix E.

TABLE 3

SASKATCHEWAN WATER QUANTITY PROGRAM
SHARED COST SUMMARY 1988-1989
(From Table 2 & Construction Report)

FEDERAL SHARE = $507 527 + $\frac{\$507\ 815}{2}$	=	$761 435
FEDERAL CONSTRUCTION SHARE	=	$89 746
TOTAL FEDERAL SHARE	=	$851 181
PROVINCIAL SHARE = $167 703 + $\frac{\$507\ 815}{2}$	=	$421 610
PROVINCIAL CONSTRUCTION SHARE (INCLUDES $60 851 FOR WORK DONE ON BEHALF OF SPC)	=	$110 272
TOTAL PROVINCIAL SHARE	=	$531 882
PROVINCIAL CREDIT FOR NETWORK PLANNING CONTRACT	=	($8 000)
PROVINCIAL DEFICIT (from 1987-88)	=	$ 9 052
NET PROVINCIAL SHARE	=	$532 934
PROVINCIAL PAYMENT 1988-89	=	($502 052)
PROVINCIAL DEFICIT FOR 1988-89	=	$ 30 882

WATER QUANTITY PROGRAM
SHARED COST SUMMARY
(1988 - 89)

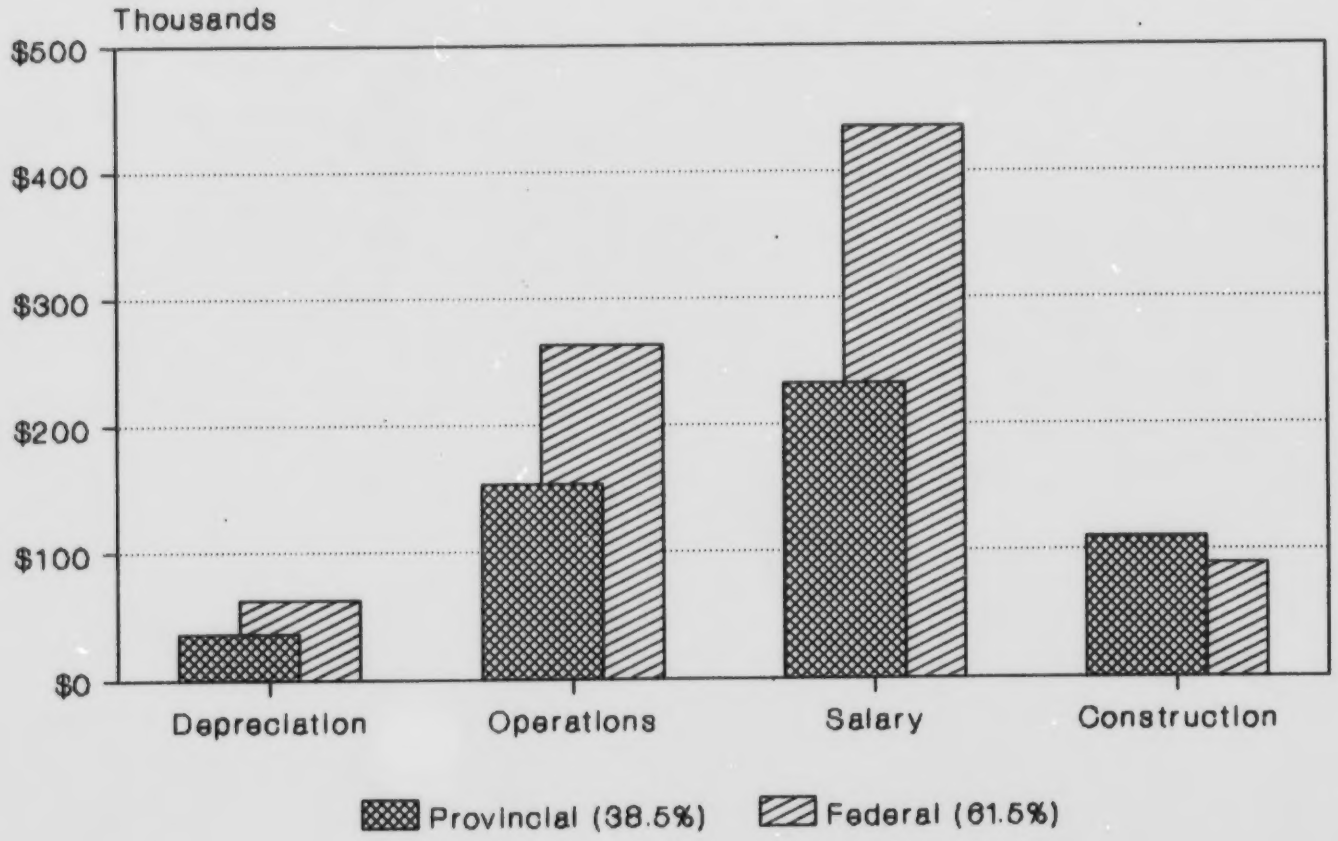

Figure 6

TABLE 4

SASKATCHEWAN WATER QUANTITY PROGRAM
HISTORICAL SUMMARY OF STATION UNIT COSTS

	TYPE OF STATION					
FISCAL YEAR	NORMAL	CHANGE*	INTERNATIONAL	CHANGE*	REMOTE	CHANGE*
1975-76	$1 583	-	$1 810	-	$3 643	-
1976-77	$1 721	8.7%	$1 971	8.9%	$3 949	8.4%
1977-78	$1 928	12.0%	$2 220	12.6%	$4 213	6.7%
1978-79	$2 106	9.2%	$2 434	9.6%	$4 501	6.8%
1979-80	$2 200	4.5%	$2 791	14.7%	$4 631	2.9%
1980-81	$2 415	9.8%	$3 055	9.5%	$5 894	27.3%
1981-82	$3 067	27.0%	$3 852	26.1%	$5 993	1.6%
1982-83	$3 297	7.5%	$4 170	8.3%	$7 003	1.7%
1983-84**	$3 615	9.6%	$4 375	4.9%	$6 872	-1.9%
1984-85	$3 741	3.5%	$4 473	2.2%	$7 244	5.4%
1985-86	$4 063	8.6%	$4 808	7.5%	$7 277	0.5%
1986-87	$4 379	7.8%	$5 185	7.8%	$8 604	18.2%
1987-88	$4 435	1.3%	$5 141	-0.8%	$8 352	-2.9%
1988-89***	$4 612	4.0%	$4 783	-7.0%	$8 216	-1.6%
1975-88	-	191.3%	-	164.3%	-	125.5%

Average percent increase for all stations since 1975-76 = 160.4%

* % = 100 x (year 2 - year 1)/year 1

** Method of calculation of station unit costs was modified from 1983-84 until 1987-88, so values may not be directly comparable.

*** Method of station unit costs was modified this year.

AVERAGE ANNUAL COSTS
FOR OPERATING A CONVENTIONAL
HYDROMETRIC STATION

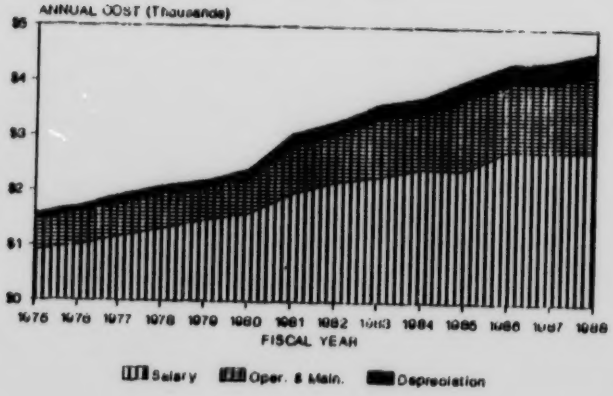

Figure 7

AVERAGE ANNUAL COSTS
FOR OPERATING A REMOTE
HYDROMETRIC STATION

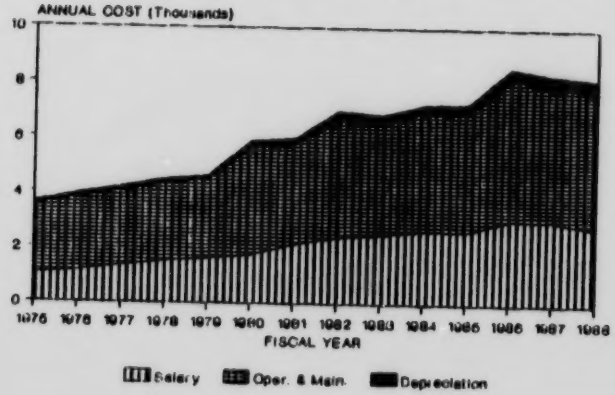

Figure 8

AVERAGE ANNUAL COSTS
FOR OPERATING AN INTERNATIONAL
HYDROMETRIC STATION

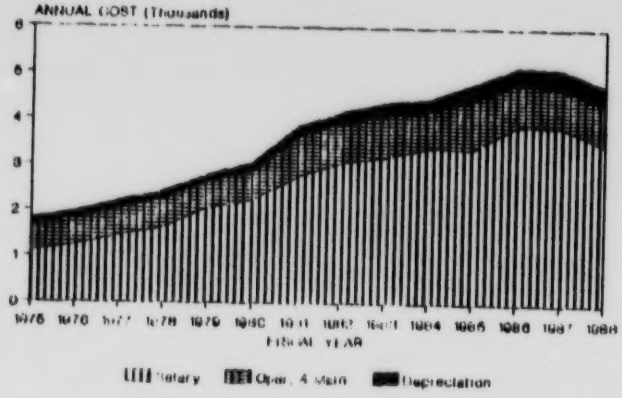

Figure 9

APPENDIX A

DETAILED PROGRAM COSTS

1988-89

4.0 DETAILED PROGRAM COSTS

4.1 INTRODUCTION

Appendix A contains Tables 5 to 10 which provide details of expenditures under the Memorandum of Agreement. Expenditures were extracted from various departmental financial systems such as payroll, materiel and fleet management. Operations expenditures were obtained from Supply and Services Canada detailed transaction listings. A record of individual expenditures is further supported by various purchase/pay documents which, under the federal records management system, are retained for a period of five years.

4.2 SALARY COSTS

Salaries of staff with full time hydrometric duties are shared under the program. Salaries of staff with partial hydrometric duties or those seconded to the program for brief periods are shared proportionately. The calculation of station unit salary costs is shown in Table 5. A factor of 1.15 and 1.25 was applied to the salary costs of remote and international gauging stations, respectively, for the first four years of the Agreement (1975–1979) to account for the greater effort needed to operate these types of stations. These factors were revised to 1.10 and 1.40 for remote and international stations, respectively, based on an analysis of 1978–79 salary costs and were used until 1987–88.

A factor of 1.25 has been used in this report for international gauging stations (1.0 for normal and remote stations) based on a recent review of salary costs. These factors will be used until 1992–93 unless revisions are justified during this five-year period.

4.3 OPERATIONAL COSTS

The derivation of station unit operating costs is shown in Table 6. A record of each expenditure is shown in Table 7 while vehicle operating costs are listed in Table 8. A breakdown of 1988-89 operating costs indicates that the cost of operating a remote hydrometric station in Saskatchewan was 3.58 times greater than a normal access station. This reflects high air charter costs and the generally greater cost of travelling in northern areas.

4.4 CAPITAL DEPRECIATION COSTS

Capital depreciation is charged for hydrometric survey vehicles and equipment as shown in Tables 9 and 10. Consumables such as small tools and clothing are charged to the program at the time of purchase as are certain other items such as metering boats that are part of the inventory of a specific station. All stage recording instruments are excluded.

The annual rate of depreciation for survey equipment is 10 percent annually. The actual calculation of inventory value is based on the mean of the value at the beginning and end of the fiscal year. This procedure reflects purchasing activity throughout the year.

The depreciation data for hydrometric vehicles is provided by the Fleet Management Information System which assumes a 60-month service period for station wagons and a 72-month service period for multi-purpose vehicles and trucks.

TABLE 5
SASKATCHEWAN WATER QUANTITY PROGRAM
SALARY COST 1988-1989

	Position No.	Position Title	Salary
1.	840-1265 (x0.85)	Hydrometric Technician	$ 28 263
2.	840-1279	Hydrometric Supervisor	$ 35 937
3.	840-1285	Hydrometric Supervisor	$ 35 937
4.	840-1370	Hydrometric Supervisor	$ 35 937
5.	840-1401	Hydrometric Technician	$ 28 207
6.	840-1409	Hydrometric Technician	$ 33 251
7.	840-1413	Hydrometric Technician	$ 33 251
8.	840-1460	Hydrometric Supervisor	$ 35 937
9.	840-1505	Hydrometric Technician	$ 33 251
10.	840-1506	Hydrometric Technician	$ 33 251
11.	840-5619 (x0.10)	Data Control Supervisor	$ 4 094
12.	840-7552 (x0.05)	Studies & Systems Engineer	$ 2 159
13.	840-8012	Hydrometric Technician	$ 33 251
14.	840-8013 (x0.05)	Construction Supervisor	$ 1 797
15.	840-8073	Hydrometric Technician	$ 33 251
16.	840-8119	Hydrometric Technician	$ 33 251
17.	840-8189 (x0.05)	Boundary Waters Engineer	$ 2 431
18.	840-8907	Hydrometric Technician	$ 33 251
19.	840-8913	Hydrometric Technician	$ 33 251
20.	840-8914	Hydrometric Technician	$ 33 251
21.	840-8915	Hydrometric Technician	$ 33 251
22.	840-8916	Hydrometric Technician	$ 33 251
23.	840-8951	Hydrometric Supervisor	$ 35 937
24.	840-8952 (x0.05)	Computations Technician	$ 1 410
25.	COSEP (x0.10)	Hydrometric Assistant	$ 1 156
26.	Overtime	All Positions	$ 19 003
	TOTAL	19.25 P-Ys	$667 217

CALCULATION OF STATION UNIT SALARY COST

Station Units:	Remote	32.40
	Normal	
	- Non-International	156.95
	- International	40.35
	TOTAL	229.70
	Salary-weighted Station Units	
	- Remote	32.40
	- Normal, Non-International	156.95
	- International x 1.25	50.44
	TOTAL	239.79

Unit Salary Cost =

$$\text{Salary-weighted Station Units} = \frac{\text{Total Salary Cost}}{239.79} = \frac{667\ 217}{239.79} = \$2\ 783$$

Unit Salary Cost Normal =	$2 783
Unit Salary Cost Remote =	$2 783
Unit Salary Cost International = $2 783 x 1.25 =	$3 478

TABLE 6

SASKATCHEWAN WATER QUANTITY NETWORK
OPERATIONS COST SUMMARY 1988-1989

	COST CODE* 305	306	307	TOTAL
Travel	48 738	8 369	8 091	65 198
Transportation and Postage	1 090	331	211	1 632
Telephones	6 719	611	3 968	11 298
Advertising and Printing Services	878	0	55	933
Professional and Special Services	3 480	0	1 200	4 680
Temporary Help Services	2 488	6 243	0	8 731
Rentals	2 924	133 920	186	137 030
Purchased Repairs (other than vehicles)	5 963	146	367	6 476
Public Utility Services	46 702	0	631	47 333
Purchased Materials (other than capital)	9 103	1 504	826	11 433
Parts and Consumable Tools (other than vehicles)	15 551	44	88	15 683
Other Expenditures	823	88	67	978
Sub-Total	144 459	151 256	15 690	311 405
Current Meter Maintenance	4 516	838	1 097	6 451
Minicomputer Costs**	45 537	9 293	11 550	66 380
Vehicle Operating Costs (Table 8)	24 777	643	6 886	32 306
Total Operating Costs	219 289	162 030	35 223	416 542
Station Units	156.95	32.40	40.35	229.70
Unit Operations Cost	1 397	5 001	873	1 813

* 305 - conventional
306 - remote
307 - international

** See Appendix B for details

TABLE 7

SASKATCHEWAN WATER QUANTITY PROGRAM

COST ACTIVITY SUMMARY

1988-1989

LINE OBJECT NAME	LO#	TOTAL	001	109	303	304	305	306	307	308	310	313	316	317	319	350	379
TRAVEL																	
Travel Expenses	0401	116763	27273		442	1119	48738	8369	8091	2713	19918					100	
Taxi - HQ Area	0441	27	27														
Travel Training	0444	9981	9380											601			
Travel Non-Public Service	0450	411	411														
Removal Travel Costs	0560	75	75														
TRANSPORTATION AND POSTAGE																	
Air	0601	2817	544		991		606	211	19			16		28	356	46	
Trans Goods NES Oth Depts	0605	1786	82		1426		133	120							25		
Other Postal	0652	3422	3381				19		22								
Courier	0653	1522	936		28		332		170			56					
TELEPHONES																	
Telephones (GTA)	0701	13341	13341														
Install & Repair (non-GTA)	0702	747	193									554					
Long Distance (non-GTA)	0703	4621	327				2202	210	1713			87	82				
Service Charges (Rental)	0704	22186	7220	94	140		4217	376	2019			8120					
Other Voice Service (non-GTA)	0705	64													64		
Sales Tax Communications	0710	492	99				97	25	135			122	14				
Message & Data (non-GTA)	0806	4648					165		92			4365			6		
Radio Licences	0822	528	522												6		
Sales Tax & Communications	0850	265					18		9			238					
ADVERTISING & PRINTING																	
Advertising Creation N G	0901	43	6						37								
Advertising Placement N G	0902	106	88						18								
Print Service DESS	1060	15					15										
Other Printing Services DSS	1064	1148	731				400								17		
Other Print Service Outside	1073	3643	2677		688		278										
Audio Visual Servs N G	1086	132	132														
Photographic Ser Photos	1093	1143	899		59		185										
PROFESSIONAL & SPECIAL SERVICE																	
Legal Serv	1105	332	332														
Surveys Consul	1111	200	200														
Design Draft Eng Const	1140	2000					2000										
Gauge Attendants	1171	3410				730	1480		1200								
Res Contracts Env Issues	1182	8573			8573												

TABLE 7

SASKATCHEWAN WATER QUANTITY PROGRAM

COST ACTIVITY SUMMARY

1988-1989

LINE OBJECT NAME	L04	TOTAL	001	109	303	304	305	306	307	308	310	313	316	317	319	350	379
TRAINING																	
EDP Consult Outside	1190	8320			8320												
STF Dev Tr PSC Ex Ltr	1220	295	295														
Tuition University & College	1221	477	477														
Other	1222	6309	6209														
Training Consultant	1225	5443	5443											100			
TEMPORARY HELP SERVICE																	
Contract Steno	1301	424	424														
Contract Clerical	1302	1811	1811														
Other Temporary Help	1303	651					651										
OTHER SERVICES																	
Laundry Dry Cleaning	1501	258	258														
EDP Services DSS	1505	1107	1107														
EDP Purchases Software	1510	10917	3268														
Contract Admin. DSS	1525	13201	4224		830		1001	6243				5877	32	1659			81
Promotion Environment Week	1535	2590	2590									103					
Brokerage Fees	1554	174			41												
Storage Warehouse	1560	548	20												133		
Garbage Collection	1566	285	285									438		90			
Membership Fees	1575	155	155														
Snow & Ice Removal	1581	237	237														
Petty Cash Purchase	1589	88	57				16				15						
Srv NES Exc Gov Dept	1595	20					20										
Miscellaneous Services	1597	63	63														
RENTALS																	
Land	1601	285						285									
Rent EDP Equipment	1615	1425	1045														
Photo Printing Equipment	1621	1757	1757										380				
Electronic/Auto. Office System	1623	1421	1421														
Photo & AV Equip.	1624	112	112														
Machine Equipment	1625	7736	50				290	30			7366						
Lease Motor Vehicle	1630	151	61								90						
Deliv & Const Vehicles	1631	41	41														
Aircraft External Supplie	1635	132275						132275									
Boat	1636	230						230									
Building Rental	1640	493	493														
Gas Cylinders (Rental)	1650	3920					2634	1100	186								
Rent Equip N E S	1651	525	525														
Furniture & Fixtures	1655	212	212														

TABLE 7

SASKATCHEWAN WATER QUANTITY PROGRAM

COST ACTIVITY SUMMARY

1988-1989

LINE OBJECT NAME	LU0	TOTAL	001	109	303	304	305	306	307	308	310	313	316	317	319	350	379
PURCHASED REPAIR																	
Ele Light Distr Cont Equip	1715	615	225				390										
Mea Cont Lab Inst Excl Hy	1718	9168	4074				4581	146	367								
Sa San Alrm Sign Syst	1719	385	85									300					
Ser Ind Equip Vend Mach	1721	1691	973				718										
Other Equipment	1728	241	84				157										
EDP Equipment	1735	28388	2115									20912		5361			
Other non-elec. Office Equip	1737	141	141														
Road Motor Vehicles	1746	4638	4521				117										
Oversnow Vehicles	1749	60	60														
BUILDING & STRUCTURES REPAIR																	
Gauge Stations	1805	390									390						
Pow Transm Dist Line	1825	781									781						
Loc. Smoothed Sig etc.	1837	1362	1362														
Rep Bldg Work	1839	493	493														
PUBLIC UTILITY SERVICES																	
Electric Consumption	1901	47352	19				46702		631								
PURCHASED MATERIALS																	
Topsoil, Sand & Gravel	2006	5495									5495						
Propane	2013	1522	190				941	391									
Automotive Gas	2014	33697	33690					7									
Jet Fuel	2016	1233					974	259									
Other Petro Products	2018	1838	1786				52										
Leather Furniture	2019	2	2														
Wood Fabric Materials	2020	826	653				12				161						
Paper, paper board	2021	4917	3717				1200										
Textile Fabricated Materials	2022	688	84				4				600						
Chemical & Related Materials	2023	934	483		140		253					58					
Chlorin Oxyg Acetyl	2027	2723	2				1715	844	164								
Iron, Steel	2028	7782	981			119	39				6643						
Metal Fabricated Products	2030	7183	2827				2959				1297						
Cement	2031	188	104								84						
Glass	2034	614	574				40										
Insulation	2035	226	226														
Period Furniture	2038	12	12														
Protective Clothing	2040	1116	1116														
Footwear, Apparel & Acc	2041	1189	238				314		637								
Toiletries	2042	355	355														
House Furniture	2044	477	477														
Stocked Items - DSS	2048	2842	2842														
Audio & Video Tapes	2049	195	195														

TABLE 7

SASKATCHEWAN WATER QUANTITY PROGRAM

COST ACTIVITY SUMMARY

1988-1989

LINE OBJECT NAME	LOA	TOTAL	001	109	303	304	305	306	307	308	310	313	316	317	319	350	379
Library Stock	2051	1910	1782				84		5				39				
Maps, Charts, etc	2052	94	38				56										
Station Off Supp	2054	6424	6294				10							120			
Drafting Supplies	2055	816	816														
Photoc Pap Chem	2058	659	659														
Data Processing Supplies	2059	2044	1083									961					
Photographic Goods	2060	231	158				53		20								
Contain CLS Return	2063	1860	1685				175										
Camera Audio-vis	2065	374	374														
Paint	2068	839	703				136										
Mis Prod Audi-Vis Bib	2070	212	195				14	3									
Hardware	2071	86	47				39										
Subscriptions	2082	352	352														
Purch P Cash Inc Tn	2083	265	212		18		35										
PARTS & CONSUMABLE TOOLS																	
Heat Air Cond Refrig Equip	2111	265	252				13										
Cook Equip Food	2112	117	117														
Plumb Equip Fit	2113	269	260								9						
Elec Lght Dist Cont Equip	2114	2725	1471				1254										
Other Electrical Equipment	2116	430	345				21				64						
Batteries	2118	4023	928				1919										
Other Lab Supplies	2120	2281			2281										1176		
Scientific Equipment	2121	2890					2890										
Mea Cont Med Opt Inst	2122	19046	2045		392		7729										
Saf Sanit Equip	2124	646	250				396								8880		
Service Industry Equip	2125	4661	1638				806				2217						
Hand Tools	2126	3193	2676				367	44	80			18					
Other Equip Incl X-ray	2128	52	52														
Photographic Equipment	2129	309	309														
Lawnmowers	2130	58					58										
EDP Equipment	2135	3231	656									2046		529			
Telecom Equip Radios	2136	299	299														
Elec/Auto Office Syst Equip	2137	513	173									340					
Other Office Equipment	2138	91	51				40										
Software Packages	2139	4392										2665		1727			
Ships,Boats	2140	263	235				28										
Motors Vehicles	2146	7174	7144				30										
Tires & Tubes	2147	2797	2797														

TABLE 7

SASKATCHEWAN WATER QUANTITY PROGRAM

COST ACTIVITY SUMMARY

1988-1989

LINE OBJECT NAME	LOB	TOTAL	001	109	303	304	305	306	307	308	310	313	316	317	319	350	379
OTHER EXPENDITURES																	
Damage Claims	2510	5823	5823														
Pay Customer Duty Tax	2524	4739			172		715	67	67						3718		
Pay Misc Tax	2525	21						21									
Other Misc Expenditure	2527	108					108										
Vehicle Registration	2528	1407	1407														
SUB-TOTAL		668145	209648	94	24541	1968	144459	151256	15690	2713	45130	47276	547	10215	14381	146	81
EQUIPMENT ACQUISITION																	
Electronic Equipment	2320	1576	1576														
Scientific Equipment	2321	357	357														
MEA Cont Lab Inst Exchang	2322	25583					15308						1561		8714		
Srv Ind Equip Vend Mach	2332	4502	4502														
Furn Fixt Enc Dss	2333	3470	3470														
Furn Fixt Dss	2334	915	915														
Photo Audio-Vis Equip	2335	2684	2684														
Other Furniture & Fixtu	2348	289	289														
Image Video and Comm Equi	2351	3145	3145														
Other EDP Equipment	2357	46948	31450									9081	1404	5013			
EDP Software	2361	2504												2504			
Other Office Mach & Equip	2362	500	500														
Shp Boat Rel Equip	2365	2288	2288														
Rd Motor Vehicle	2371	54399	54399														
EQUIPMENT ACQUISITION TOTAL		149160	105575	0	0	0	15308	0	0	0	0	9081	2965	7517	8714	0	0
GRAND TOTAL		817305	315223	94	24541	1968	159767	151256	15690	2713	45130	56357	3512	17732	23095	146	81

TABLE 8

VEHICLE OPERATING COSTS 1988-1989*

Vehicle Type	Usage vehicle-months	Average Cost/Month	Total Cost Construction 310	Hydrometric 305,306,307	Hydrometric Cost** Normal 305	Remote 306	Int'l 307
Full Size S.W.	1	$130.67	-	$131.00	$131.00	-	-
Multi-purpose	220	$142.06	$4 610.00	$26 644.00	$20 409.00	$533.00	$ 5 702.00
Light Truck	48	$115.23	-	$ 5 531.00	$4 237.00	$110.00	$ 1 184.00
Med. Truck	12	$391.73	$4 701.00	-	-	-	-
Heavy Truck	12	$474.75	$5 697.00	-	-	-	-
TOTAL	293		$15 008.00	$32 306.00	$24 777.00	$643.00	$6 886.00

* Data extracted from F.M.I.S. Cost Summary Report dated 89-07-01

** Hydrometric costs for 1988-89 are prorated on basis of the 1987-88 Annual Report.

TABLE 9

SASKATCHEWAN WATER QUANTITY PROGRAM
CAPITAL DEPRECIATION COSTS 1988-1989

1.	VEHICLE DEPRECIATION (Table 10)			$59 603
2.	EQUIPMENT DEPRECIATION*			
	- Field Equipment	$103 400		
	- Marine Equipment	$ 24 100		
	- Scientific Equipment	$ 97 980		
	- Transportation Equipment	$ 23 800		
	- Shop & Construction Equipment	$ 72 300		
	- Accountable Items	$ 78 900		
	Total Inventory Value March 31, 1989	$400 480		
	Total Inventory Value March 31, 1988	$393 186		
	Average Inventory Value for 1988-89	$396 833		
	Capital Depreciation of Equipment @ 10%	$396 833 / 10	=	$39 683
3.	TOTAL CAPITAL DEPRECIATION			$99 286
4.	UNIT CAPITAL DEPRECIATION			
	= Total Capital Depreciation / Total Station Units =	$ 99 286 / 229.70	=	$ 432

* Departmental Equipment-In-Use Material Management System

TABLE 10

VEHICLE DEPRECIATION
SASKATCHEWAN FY 1988-1989

Vehicle Number	Original Capital Cost $	Depr. per month $	Time in use Months	Annual Depr. $	Remarks
Station Wagons - Lifetime 60 months					
81-048	7 874	131	1	131	CADC* - May 88
83-150	9 009	150	0	0	CADC - April 88
Multi-Purpose Vehicles and Trucks - Lifetime 72 Months					
82-069	12 295	171	2	342	CADC - May 88
83-002	8 059	112	12	1 344	
83-149	14 395	200	12	2 400	
83-151	12 660	176	12	2 112	
84-124	14 610	203	1	203	CADC - May 88
84-125	12 755	177	12	2 124	
84-126	21 549	299	12	3 588	Construction
85-087	13 506	188	12	2 256	
85-088	13 506	188	12	2 256	
85-089	8 478	118	12	1 416	
85-090	13 506	188	12	2 256	
85-091	11 140	155	12	1 860	
86-046	16 174	225	12	2 700	
86-047	15 400	214	12	2 568	Construction
86-048	15 400	214	12	2 568	
86-049	13 056	181	12	2 172	
86-050	11 641	162	12	1 944	
86-051	14 611	203	12	2 436	
87-085	16 691	232	12	2 784	
87-086	16 691	232	12	2 784	
87-087	18 449	256	12	3 072	Construction
87-088	16 691	232	12	2 784	
87-089	16 691	232	12	2 784	
88-044	16 130	224	9	2 016	
88-045	14 224	198	9	1 782	
88-046	18 673	259	9	2 331	
88-047	18 673	259	10	2 590	

Actual replacement cost of Saskatchewan vehicles in 1988-89 = $67 700

Vehicle depreciation = $59 603

*Crown Assets Disposal Corporation

APPENDIX B

WRB MINICOMPUTER
COST-SHARING
1988-89

5.0 WRB MINICOMPUTER COST SHARING: 1988-89

5.1 COST SHARING PROCEDURE

Determination of the 1988-89 shareable computer costs has been complicated by the installation of the WRB minicomputer and by the need for the continued use of Westbridge Computer Corporation (formally SaskComp) for a small portion of the hydrometric data computations. The calculations for the shareable computer costs are shown in Section 5.2.

The cost-sharing formula includes imputed rental, necessary to amortize the capital expenditure for the minicomputer system, the annual operating cost (AOC) and the annual maintenance cost (AMC). The initial capital expenditure is amortized over a period of 10 years by multiplying by 0.10. Because the expected residual value of the minicomputer system at the end of this period is assumed to be zero, capital purchases made between year 1 and year 10 are amortized for shorter periods. For instance, a purchase made in year 2 would be amortized for 9 years. This procedure for determining the annual (shareable) computing costs is to be used until such time that the present minicomputer system is replaced.

The formula can be expressed as Total (Shareable) Annual Computing Cost

= (Initial Capital Expenditure X 0.10)

$$+ \left(\text{new capital} \times \frac{1}{\text{(11-year 2 to year 10)}}\right) + \text{AOC} + \text{AMC}$$

However, since the decision of using an in-house minicomputer system was not a joint federal-provincial one, a ceiling for the total (shareable) annual computing cost has been recommended. The ceiling is determined using the previous year's total (shareable) computing costs multiplied by a national cost increase factor (i.e. Government Price Index). The actual cost to be shared is the lesser of the two; that calculated using the formula or that determined using the previous year's total (shareable) computing cost times the Government Price Index.

The items considered to be shareable may be classified as either part of the capital expenditure, annual operating costs or annual maintenance costs and are itemized as follows:

Shared Costs

1. Capital Expenditure:

   - The imputed rental will be calculated using the capital cost of the minicomputer system determined on April 1st of the fiscal year. The items to be included when determining the imputed rental are the digitizer system, terminals, plotters, microcomputers, modems, printers, and other hardware items which may be added from time to time.

   - The purchase cost of additional equipment will only be added when the equipment can be used in the data computational process.

   - When the capital cost is adjusted to include additions, due to the purchase of new equipment, the capital cost will be reduced by the amount of the imputed rental recovered since the last upgrade.

2. Annual Operating Costs (AOC):

   - The annual operating cost will include any annual charge for rental and/or licence charges for software, communications costs between the minicomputer and host computer, communications costs between sub-offices and the minicomputer for the compilation of annual data as well as host computer costs and miscellaneous supplies.

3. Annual Maintenance Costs (AMC):

   - The annual maintenance costs will include the charge for the maintenance of the complete minicomputer system.

5.2 MINI-COMPUTER - MAINFRAME CHARGES
1988-89 FISCAL YEAR

A.	Mainframe		
	1. Westbridge - (includes RJE port)		$2 488.70
B.	Service Charges		
	1. Electronic Environments (Refrigeration installations) Power and air conditioning		$252.36
	2. Chubb Fire Security 2 inspections at $150/inspection		$300.00
	3. Digital PDP 11/44 maintenance	$13 351.20	
	MicroVax II (Prince Albert)	$4 880.40	
	Decmate III + LQP02 printer	$571.50	
		$18 803.10	$18 803.10
	4. Crown Store-All - storage and delivery of computer disks and tapes		$915.00
	5. Gentian - digitizer maintenance (Prince Albert and Regina)		$1 029.40
	6. Calcomp -1012 plotter maintenance		nil
	7. Dataforce (Sask Tel)		
	C.ITOH 600 + printer maintenance	$804.00	
	LA120 printer maintenance - Prince Albert	$483.00	
	LA120 printer maintenance - Shaunavon	$579.00	
		$1 866.00	$1 866.00
	8. Lanpar - terminal repairs		$565.00

9.	Sask Tel		
	-Datapac rental	$2 899.95	
	-Datapac charges	$3 625.45	
	Rental of conditioned lines (2 Regina, 2 Prince Albert and 1 Shaunavon)	$2 164.20	
	rental of RJE line	$1 627.20	
	long distance charges	$1 942.10	
	service charges RJE	$86.83	
	installation Datapac at Prince Albeert	$455.90	
	Federal communications tax	$596.76	
		$13 398.39	$13 398.39

C. Supplies

computer paper	$497.52	
RA60 disk packs (4)	$4 875.80	
TK50 cartridges (20)	$856.00	
plotter paper (JV)	$1 100.00	
	$7 329.32	$7 229.32

D. Capital and licences

Capital items were purchased during the 1988-89 fiscal year and will be included in the 1989-90 cost-sharing calculations for the value of the mini-computer system.

C.ITOH C1-2500 printer for sediment laboratory	$1 545.00	
communications controller, cabinet kit, VAX PSI licence, Vax DECnet licence and VAX PSI media and documentation for the Prince Albert MVII	$9 208.56	
	$10 753.56	$10 753.56

1. Formula for Total (Shareable) Annual Computing Cost

= Imputed rental charges and annual operating cost
+ maintenance cost

Where the imputed rental charge is the capital value of system on April 1, 1988 amortized for 6 years.

This total shareable cost cannot exceed the 1983-84 shareable cost multiplied by the annual Government price indicies for each year since 1983-84.

2. a) Calculation of 1988-89 costs

Imputed rental calculation formula

= (Initial capital x 1/10) + (new capital x 1/9) + (new capital x 1/8)
year 1 year 2 year 3

Initial capital	= $182,800
year 1	= $18,280
New capital (year 2)	= $29,624
year 2	= $18,280 + ($29624 x 1/9)
	= $21,572
New capital (year 3)	= $68,168
year 3	= $21,572 + ($68,168 x 1/8)
	= $21,572 + $8521
	= $30,093
New capital (year 4)	= $3,575
year 4	= $30,093 + (3,575 x 1/7)
	= $30,604
New capital (year 5)	= $10,753
year 5	= $30,604 + (10,753 x 1/6)
	= $32,396
Imputed rental for 1988-89	= $32,396

b) Annual Operating Cost (AOC)

-Host computer (SaskComp) Shareable Cost	$2,488.70
-storage of backup disks	$915.00
-telecommunication charges and rentals	$13,398.39
-supplies - paper, ribbons, etc.	$7,329.32
	$24,131.41

c) Annual Maintenance Cost (AMC)

-PDP 11/44 computer	$13,351.20
-MicroVax II (Prince Albert)	$4,880.40
-Decmate III and printer	$571.50
-fire protection, power and air conditioners	$552.36
-plotter	nil
-digitizer	$1,029.40
-CITOH printer	$804.00
-terminal repairs	$565.00
-LA120 printers (Prince Albert and Shaunavon)	$1,062.00
	$22,815.86
AMC =	$22,815.86

d) Total Shareable Computing Costs

= a) + b) + c)

= $32,396 + $24,131.41 + $22,815.86

= $79,343.27

3. Ceiling Calculation of Total (Shareable) Annual Computing Cost

1987-88 costs = $63,530
1988 Government Price Index = 1.0449
1988-89 Ceiling = $63,530 x 1.0449
= $66,382

Computed costs for 1988-89 = $79,343.27

Therefore, shareable computing cost = ceiling

= $66,380

APPENDIX C

STATION AND COST SUMMARY DATA
FOR INCLUSION IN NATIONAL ANNUAL REPORT

Province/Territory: SASKATCHEWAN

TABLE 1
WATER QUANTITY SURVEYS
GAUGING STATION DATA FOR 1988-1989

No. of Stations			Changes during 1988-89		Stn. Designation April 1, 1988			
April 1 87	April 1 88	Change	Added	Discontinued	Fed.	F P	Prov.	Contrib.
362	356	-6	0	6	* (2) 139	* 125	* 91	1

* Bracket Sediment Stations

TABLE 2
WATER QUANTITY SURVEYS
COMPARATIVE GAUGING STATION DATA April 1/75 to April 1, 1988

Federal Stations			F P Stations			Provincial Stations			Total Stations		
Apr 1 75	Apr 1 88	Chge	Apr 1 75	Apr 1 88	Chge	Apr 1 75	Apr 1 88	Chge	Apr 1 75	Apr 1 88	Chge
173	139	-34	106	125	+19	51	91	+40	330	356	+26

TABLE 3
WATER QUANTITY SURVEYS
DETAILED GAUGING STATION DATA 1988-89

F-1	F-2	F-3	F-4	Total F	FP-1	FP-2	FP-3	Total F P	P-1	P-2	Total P	Contributed	Total-All
12	(2) 43	63	21	139	0	22	103	125	79	12	91	1	356

Bracket Sediment Stations in all catagories.

Province: SASKATCHEWAN

TABLE 4
WATER QUANTITY SURVEYS
TOTAL PROGRAM COSTS & SHAREABLE COSTS FOR 1988-1989
(× $1000)

Total Program Costs					Shareable Costs						
P/Yrs	Sal.	Oper.	Cap.	Total	P/Yrs	Sal.	Oper.	Const.	Total	F Share	P Share
34.61	1 264.0	668.2	166.7	2 098.9	19.25	667.3	515.8*	200.0	1 383.1	851.2	531.9

*Consists of operations costs (Table 6) + capital depreciation costs (Table 9)

TABLE 5
WATER QUANTITY SURVEYS
SUMMARY OF SCHEDULES D/F-1988-1989

Streamflow & Water Level		Sediment		Total
Operation	Construction	Operation	Construction	
419 000	73 000	1 000	0	493 000

TABLE 6
WATER QUANTITY SURVEYS
COMPARISON - SCHEDULED & ACTUAL COSTS FOR 1988-1989
(Dollars)

Salary & Operations		Construction		Total			Annual Payment Received	Received Minus Actual
Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Difference		
420 000	421 610	73 000	110 272	493 000	531 882	-38 882	502 052	-29 830**

** Deficit for 1987-88 = $9 052 and network planning credit = $8 000 therefore, net Saskatchewan deficit for 1988-89 = $29 830 + $9 052 - $8 000 = $30 882

APPENDIX D

CANADA-SASKATCHEWAN
MEMORANDUM OF AGREEMENT
FOR
WATER QUANTITY SURVEYS

7.0 MEMORANDUM OF AGREEMENT

7.1 MEMORANDUM OF AGREEMENT

MEMORANDUM OF AGREEMENT made this eighteenth day of February, 1975,

BETWEEN:

The Government of Canada, hereinafter called "Canada", represented by the Minister of the Environment

OF THE FIRST PART

-and-

The Government of the Province of Saskatchewan, hereinafter called the "Province", represented by the Minister of Environment

OF THE SECOND PART.

WHEREAS co-operative water quantity surveys have been carried on for many years under various informal federal-provincial agreements in the Provinces of Canada by the Water Survey of Canada of the Department of the Environment, for the purpose of securing co-ordinated and standardized basic data to facilitate resource planning and management in general and the design and implementation of projects related to navigation, hydro-electric development, irrigation, drainage, flood control, recreation, domestic and industrial water supply and other purposes;

AND WHEREAS the Governor-in-Council has by Order-in-Council No. PC 1975-1/172 dated January 28, 1975, authorized the Minister of Environment to execute this agreement on behalf of Canada, subject to funds being voted by the Parliament of Canada;

AND WHEREAS the Lieutenant Governor in Council has, by Order-in-Council No. O.C. 282/75 dated February 11, 1975, authorized the Minister of Environment to execute this agreement on behalf of the Province subject to funds being voted by the Legislative Assembly.

NOW THEREFORE this agreement witnesseth that water quantity surveys in the Province and the financing thereof shall be continued and maintained upon the following basis;-

DEFINITIONS

a) ANNUAL PAYMENT - a sum, agreed to by both parties in advance of the fiscal year, which shall represent the costs of operation and construction of water quantity survey stations.

b) CONSTRUCTION - includes the construction of new water quantity survey stations and the maintenance, repair and reconstruction of existing water quantity survey stations.

c) CONSTRUCTION PERSONNEL - includes foremen and labourers on full time duty as well as engineering and technical staff on part time supervisory duty or reconnaissance assignment.

d) FIELD PERSONNEL - includes hydrometric supervisors and field technicians on full time duty as well as engineering and technical staff on temporary assignment.

e) NETWORKS - an organized system of gauging stations for collection of water quantity survey data.

f) OPERATING PARTY - either party to this agreement which operates water quantity survey stations.

g) PUBLISHED DATA - includes streamflow, water level and sediment data. The data is to be available in publications and computer compatible data files.

h) SEDIMENT STATIONS - any location where surveys are undertaken to collect data on suspended sediment or bed material or bed load data singly or in combination. Water temperature data is to be collected.

i) WATER QUANTITY SURVEY STATIONS - any location where surveys are undertaken to collect streamflow or water level or suspended sediment or bed material or bed load data singly or in combination. Water temperature data may be collected.

ARTICLE I

Each water quantity survey station presently in operation has been identified according to the designation federal, federal-provincial or provincial. The current designation is given in Schedule A, hereto attached. Schedule A may be revised to include a change in the designation of a station, the addition of new stations or the deletion of stations as agreed by the Co-ordinating Committee (Article XII) and approved by the officials named in Article XIII.

OPERATIONAL CONSIDERATIONS

ARTICLE II

Canada will construct and operate and pay the cost of construction and the annual cost of operation of water quantity survey stations which have been designated as federal. Where Canada deems it desirable in the interest of efficiency of operation, the Province may be requested to construct and operate some federal water quantity survey stations. If the Province agrees to such agreements, Canada would in such cases reimburse the Province for the cost of construction and annual cost of operation in accordance with Article VI.

ARTICLE III

Where Canada constructs and operates water quantity survey stations designated as federal-provincial, the Province will reimburse Canada for 50% of the construction costs and 50% of the annual cost of operation. Where the Province constructs and operates these stations, Canada will reimburse the Province for 50% of the construction costs and 50% of the annual cost of operation in accordance with Article VI.

ARTICLE IV

If requested by the Province, Canada will construct and operate water quantity survey stations designated as provincial provided the Province reimburses Canada for the construction cost and annual cost of operation. If the Province constructs and operates these stations the Province will assume the cost of construction and operation in accordance with Article VI.

ARTICLE V

a) The operating party shall provide the staff to meet its responsibilities under this agreement.

b) Canada will at its own expense publish data from stations that it operates. Canada will on request at its own expense, publish data from stations operated by the Province providing the data meet national standards.

c) Water quantity surveys under this agreement shall be carried out to national standards in field procedures, equipment and instrumentation, data compilation and will use national guidelines for station designations. Such standards and guidelines shall be developed and maintained by Canada in consultation with all of the Provinces.

d) Canada and the Province shall work together to take advantage of technological advancements which improve the quality of data and the efficiency of standard procedures and to develop methods and techniques to assist in planning water quantity survey networks.

e) Canada at its own expense will provide calibration service for water quantity survey velocity instruments for both parties.

FINANCIAL CONSIDERATIONS

ARTICLE VI

a) Procedures for computing the annual payment are given in Schedule C.

b) The annual payment for 1975-76 is set out in Schedule D. The annual payment for subsequent years shall be determined according to the terms of this agreement and the procedures as set out in Schedule C.

c) Annual operation costs, except for sediment stations, will be computed using average annual water quantity survey station costs and the number of stations to be operated. The average annual water quantity survey station costs shall be recomputed annually according to the items listed in Schedule B.

d) Annual construction costs, except for sediment stations, will be the cost of constructing new water quantity survey stations plus repairs to and major reconstruction of existing water quantity survey stations.

e) The annual operation costs for sediment stations will be the summation of the individual station operation costs.

f) The annual construction costs of sediment stations will be the cost of constructing new sediment stations plus repairs to and major reconstruction of existing stations.

ARTTICLE VII

a) The party operating the water quantity survey stations in accordance with Articles II, III and IV, will be responsible for providing and paying the total cost of the water level recording equipment.

b) All costs associated with the purchase, installation and operation of specialized water quantity survey equipment will be paid for by the party or parties requiring the service.

ARTICLE VIII

Canada or the Province, depending on the operating responsibilites, shall submit invoices for one-quarter of the annual payment on July 1st, October 1st, January 1st and March 1st of each fiscal year in accordance with the annual payment set out in Schedule D. payment is to be made as soon as possible after receipt of each quarterly claim but in no case later than March 31st of each year.

ARTICLE IX

Except as agreed by the parties hereto where both parties have an interest, either operational or financial, the annual net change in the total number of water quantity survey stations, including federal, federal-provincial and provincial, as set out in Schedule A, is not to exceed 7% in any year.

ARTICLE X

Each party constructing or operating a water quantity survey station or stations shall keep complete records of all shareable expenditures made pursuant to this agreement and shall support such expenditures with proper documentation. Canada and the Province upon request shall make these records and documents available to auditors appointed by each other.

CO-OPERATION

ARTICLE XI

There shall be a free exchange of water quantity survey data between Canada and the Province. The party operating the water quantity survey station shall retain originals or a microfilm copy of observations, measurements, recorder charts and computations and these are to be available to the other party on request.

ARTICLE XII

The officials named in Article XIII shall establish a Co-ordinating Committee representing each of the parties affected by this agreement. The Co-ordinating Committee shall be responsible for:

a) Planning and the continuing review of water quantity survey networks, including addition and deletion of all stations within Provincial boundaries.

b) Determining and reviewing the designation of water quantity survey stations using national guidelines which may from time to time be changed, subject to ratification by Canada and all of the Provinces.

c) Assuring the maintenance of standards in procedures, data compilation and instrumentation.

d) Reviewing annual operating costs and establishing average annual station costs, as per Article VI, for revision of Schedule D.

e) Preparation annually of new Schedule A and D which with the approval of the officials named in Article XIII would apply for the second and each subsequent year of the agreement.

The committee shall meet at least once a year and shall report to the officials named in Article XIII.

ADMINISTRATIVE ARRANGEMENTS

ARTICLE XIII

This agreement is to be administrated for Canada by the Regional Director of the Inland Waters Directorate located at Regina, Saskatchewan, and for the Province by the Chief, Water Management Service, Saskatchewan Department of Environment, located at Regina, Saskatchewan.

IMPLEMENTATION

ARTICLE XIV

The parties hereto agree that water quantity surveys will be carried out as indicated in Articles I to XIII inclusive and the Schedules attached hereto.

PERIOD OF AGREEMENT

ARTICLE XV

This agreement shall become effective and binding on the parties upon the first day of April, 1975.

The agreement may be terminated by Canada or the Province on March 31st of any year provided that eighteen (18) months notice in writing is given. The agreement may be revised with the consent of the Governor-in-Council and the Lieutenant Governor-in-Council.

IN WITNESS WHEREOF the Honourable Jeanne Sauve, Minister of Environment has hereunto set her hand on behalf of Canada, and the Honourable Neil E. Byers, Minister of Environment has hereunto set his hand on behalf of the Province of Saskatchewan.

Signed on behalf of Canada)
by the Honourable Jeanne Sauve,)
Minister of Environment)
)
)
)
)
IN THE PRESENCE OF)
)
)
)
)
)
Signed on behalf of the Province of)
Saskatchewan by the Honourable)
Neil E. Byers, Minister of)
Environment)
)
)
)
IN THE PRESENCE OF)
)
)
)
)

7.2 SCHEDULE A: APRIL 1, 1988

Schedule A of the Memorandum of Agreement identifies the operational and financial responsibility for hydrometric stations that comprise the water quantity network and are active on April 1 of each year. The Schedule also shows the type of data collected (flow, water level, sediment) and the period of operation (seasonal or annual). Decisions regarding changes to the Schedule are made by the Co-ordinating Committee with reference to the national designation guidelines for station classification. The Saskatchewan hydrometric network existing as of April 1, 1988 is documented in this section.

MARCH 01 1988

SCHEDULE A

SASKATCHEVAN WATER QUANTITY STATIONS
1988-89
F1 - FEDERAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05GG005	ANGLIN LAKE RESERVOIR	WSC	12L			PRINCE ALBERT
2.	05HA070	DOWNIE LAKE INFLOW CANAL	WSC	8Q			REGINA
3.	05HA064	DOWNIE LAKE RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
4.	05JF008	FAHLMAN CREEK NEAR DAVIN	WSC	8Q			REGINA
5.	05HA069	GAP CREEK BELOW DOWNIE LAKE DIVERSION	WSC	8Q			REGINA
6.	05HA074	HARRIS RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
7.	05HA063	JUNCTION RESERVOIR NEAR MAPLE CREEK	WSC	8L			REGINA
8.	07NC003	LAKE ATHABASCA NEAR CRACKINGSTONE POINT	WSC	12L		REMOTE	PRINCE ALBERT
9.	05HA076	MAPLE CREEK BELOW JUNCTION RESERVOIR	WSC	8Q			REGINA
10.	05JC004	RUSHLAKE CREEK ABOVE HIGHFIELD RESERVOIR	WSC	8Q			REGINA
11.	05GG007	SPRUCE RIVER BELOW ANGLIN LAKE RESERVOIR	WSC	12Q			PRINCE ALBERT
12.	05GG006	SPRUCE RIVER DIVERSION TO EMMA LAKE	WSC	8Q			PRINCE ALBERT

MARCH 01 1988

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
F1 - FEDERAL DEPARTMENTAL PROGRAMS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		1		0.40
NORMAL ACCESS				
	8L	3	0.25	0.75
	12L	1	0.40	0.40
	8Q	6	0.75	4.50
	12Q	1	1.00	1.00
TOTAL		11		6.65
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		12		7.05

MARCH 01 1988

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
F2 - INTERPROVINCIAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05MD004	ASSINIBOINE RIVER AT KAMSACK	WSC	12Q			REGINA
2.	05JE010	AVONLEA INDEX RESERVOIR	WSC	8L			REGINA
3.	05JE007	AVONLEA RESERVOIR NEAR AVONLEA	WSC	8L			REGINA
4.	11AB117	BATTLE CREEK AT ALBERTA BOUNDARY	WSC	8Q			REGINA
5.	05JF006	BOGGY CREEK NEAR LUMSDEN	WSC	8Q			REGINA
6.	05AH001	BOXELDER CREEK NEAR WALSH	WSC	8Q			CALGARY
7.	05HF007	BRODERICK IRRIGATION MAIN CANAL BELOW PUMPING STATION	WSC	8Q			REGINA
8.	05JG009	BUFFALO POUND LAKE AT PUMPING STATION	WSC	12L			REGINA
9.	05KH007	CARROT RIVER NEAR TURNBERRY	WSC	12Q			WINNIPEG
10.	06EA002	CHURCHILL RIVER AT SANDY BAY	WSC	12Q		REMOTE	PRINCE ALBERT
11.	05JM006	CROOKED LAKE NEAR GRAYSON	WSC	12L			REGINA
12.	05KH011	DRAGLINE CHANNEL NEAR SQUAW RAPIDS	WSC	12Q			PRINCE ALBERT
13.	05JK005	ECHO LAKE AT FISH HATCHERY	WSC	12L			REGINA
14.	05JM010	EKAPO CREEK NEAR MARIEVAL	WSC	8Q			REGINA
15.	05JG006	ELBOW DIVERSION CANAL AT DROP STRUCTURE	WSC	12Q			REGINA
16.	05JL002	INDIANHEAD CREEK NEAR INDIAN HEAD	WSC	8Q	X		REGINA
17.	05JL004	KATEPWA LAKE AT KATEPWA BEACH	WSC	12L			REGINA
18.	05HF003	LAKE DIEFENBAKER AT GARDINER DAM	WSC	12L			REGINA
19.	05JH004	LAST MOUNTAIN LAKE AT ROVAN'S RAVINE	WSC	12L			REGINA
20.	11AB082	LODGE CREEK AT ALBERTA BOUNDARY	WSC	8Q			REGINA
21.	05JF013	LUMSDEN INDEX RESERVOIR	WSC	8L			REGINA
22.	05JE006	MOOSE JAW RIVER NEAR BURDICK	WSC	12Q	X		REGINA
23.	05EF001	NORTH SASKATCHEWAN RIVER NEAR DEER CREEK	WSC	12Q			PRINCE ALBERT
24.	05NE003	PIPESTONE CREEK ABOVE MOOSOMIN RESERVOIR	WSC	8Q			REGINA
25.	05JG004	QU'APPELLE RIVER ABOVE BUFFALO POUND LAKE	WSC	12Q			REGINA

MARCH 01 1988

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
F2 - INTERPROVINCIAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
26.	05JM013	QU'APPELLE RIVER AT HYDE	WSC	8Q			REGINA
27.	05JK002	QU'APPELLE RIVER BELOW CRAVEN DAM	WSC	12Q			REGINA
28.	05JL001	QU'APPELLE RIVER BELOW KATEPWA LAKE	WSC	12Q			REGINA
29.	05JK007	QU'APPELLE RIVER BELOW LOON CREEK	WSC	12Q	X		REGINA
30.	05JG007	QU'APPELLE RIVER BELOW MOOSE JAW RIVER	WSC	12Q			REGINA
31.	05JF001	QU'APPELLE RIVER NEAR LUMSDEN	WSC	12Q			REGINA
32.	05JM001	QU'APPELLE RIVER NEAR WELBY	WSC	12Q	X		REGINA
33.	05LC001	RED DEER RIVER NEAR ERWOOD	WSC	12Q	X		PRINCE ALBERT
34.	05HD033	REID LAKE NEAR DUNCAIRN	WSC	12L			REGINA
35.	06DD002	REINDEER RIVER ABOVE DEVIL RAPIDS	WSC	12Q		REMOTE	PRINCE ALBERT
36.	05JG013	RIDGE CREEK NEAR BRIDGEFORD	WSC	8Q			REGINA
37.	05JM007	ROUND LAKE NEAR WHITEWOOD	WSC	12L			REGINA
38.	05KD003	SASKATCHEWAN RIVER BELOW TOBIN LAKE	WSC	12Q			PRINCE ALBERT
39.	05JH007	SILTON INDEX RESERVOIR	WSC	8L			REGINA
40.	05JM019	STOCKHOLM INDEX RESERVOIR	WSC	8L			REGINA
41.	05HD034	SWIFT CURRENT CANAL AT SWIFT CURRENT	WSC	8Q			REGINA
42.	05KD004	TOBIN LAKE AT SQUAW RAPIDS SPILLWAY	WSC	12L			REGINA
43.	05JF005	WASCANA CREEK NEAR LUMSDEN	WSC	12Q			REGINA

MARCH 01 1988

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
F2 - INTERPROVINCIAL WATERS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	2	1.00	2.00
TOTAL		2		2.00
NORMAL ACCESS				
	8L	5	0.25	1.25
	12L	9	0.40	3.60
	8Q	11	0.75	8.25
	12Q	16	1.00	16.00
TOTAL		41		29.10
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		43		31.10

MARCH 01 1988

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
F3 - INTERNATIONAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	11AB095	ADAMS LAKE	WSC	8L			REGINA
2.	11AB089	ALTAVAN RESERVOIR NEAR GOVENLOCK	WSC	8L			REGINA
3.	05NC006	ARCOLA INDEX RESERVOIR	WSC	8L			REGINA
4.	11AB027	BATTLE CREEK AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
5.	11AB101	BATTLE CREEK BELOW NASHLYN PROJECT	WSC	8Q			REGINA
6.	11AB118	BATTLE CREEK BELOW WILSONS WEIR	WSC	8Q			REGINA
7.	11AB096	BATTLE CREEK NEAR CONSUL	WSC	8Q			REGINA
8.	11AF005	BEAVER CREEK NEAR INTERNATIONAL BOUNDARY	WSC	12Q			REGINA
9.	11AC064	BELANGER CREEK DIVERSION TO CYPRESS LAKE	WSC	8Q			REGINA
10.	05NB012	BOUNDARY RESERVOIR NEAR ESTEVAN	WSC	12L			REGINA
11.	11AE013	COOKSON RESERVOIR NEAR CORONACH	WSC	12L			REGINA
12.	11AC037	CYPRESS LAKE	WSC	8L			REGINA
13.	11AC060	CYPRESS LAKE EAST OUTFLOW CANAL	WSC	8Q			REGINA
14.	11AB078	CYPRESS LAKE WEST INFLOW CANAL	WSC	8Q			REGINA
15.	11AB085	CYPRESS LAKE WEST INFLOW CANAL DRAIN	WSC	8Q			REGINA
16.	11AB077	CYPRESS LAKE WEST OUTFLOW CANAL	WSC	8Q			REGINA
17.	05NB029	DEAD LAKE PROJECT - SOURIS RIVER CHANNEL	WSC	8L			REGINA
18.	05NB022	DEAD LAKE RESERVOIR NEAR MIDALE	WSC	8L			REGINA
19.	11AC025	DENNIEL CREEK NEAR VAL MARIE	WSC	8Q			REGINA
20.	11AE003	EAST POPLAR RIVER AT INTERNATIONAL BOUNDARY	WSC	12Q			REGINA
21.	11AC052	EASTEND CANAL	WSC	8Q			REGINA
22.	11AC055	EASTEND RESERVOIR	WSC	8L			REGINA
23.	11AC041	FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY	WSC	8Q	X		REGINA
24.	11AC001	FRENCHMAN RIVER BELOW EASTEND RESERVOIR	WSC	8Q			REGINA
25.	11AC062	FRENCHMAN RIVER BELOW NEWTON LAKE	WSC	8Q			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
F3 - INTERNATIONAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
26.	05ND006	FROBISHER INDEX RESERVOIR	WSC	8L			REGINA
27.	11AB102	GAFF DITCH NEAR MERRYFLAT	WSC	8Q			REGINA
28.	11AC063	HUFF LAKE	WSC	8L			REGINA
29.	11AC065	HUFF LAKE GRAVITY CANAL	WSC	8Q			REGINA
30.	11AC066	HUFF LAKE PUMPING CANAL	WSC	8Q			REGINA
31.	05NA006	LARSEN RESERVOIR NEAR RADVILLE	WSC	8L			REGINA
32.	11AB083	LODGE CREEK BELOW MCRAE CREEK AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
33.	05NA003	LONG CREEK AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY	WSC	12Q			REGINA
34.	05NB001	LONG CREEK NEAR ESTEVAN	WSC	12Q			REGINA
35.	05NB027	LONG CREEK NEAR NOONAN	WSC	12Q			REGINA
36.	11AB075	LYONS CREEK AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
37.	11AB044	MCKINNON DITCH NEAR CONSUL	WSC	8Q			REGINA
38.	11AB008	MIDDLE CREEK ABOVE LODGE CREEK	WSC	8Q			REGINA
39.	11AB001	MIDDLE CREEK BELOW MIDDLE CREEK RESERVOIR	WSC	8Q			REGINA
40.	11AB108	MIDDLE CREEK NEAR GOVENLOCK	WSC	8Q			REGINA
41.	11AB080	MIDDLE CREEK RESERVOIR	WSC	8L			REGINA
42.	11AB114	MIDDLE CREEK RESERVOIR BEDFORD OUTLET	WSC	8Q			REGINA
43.	11AB115	MIDDLE CREEK RESERVOIR FLOOD SPILLWAY	WSC	8Q			REGINA
44.	05NC002	MOOSE MOUNTAIN LAKE (RESERVOIR) NEAR CORNING	WSC	12L			REGINA
45.	11AB018	NASHLYN CANAL NEAR CONSUL	WSC	8Q			REGINA
46.	11AC056	NEWTON LAKE	WSC	8L			REGINA
47.	11AC054	NEWTON LAKE MAIN CANAL	WSC	8Q			REGINA
48.	05NB020	NICKLE LAKE NEAR VEYBURN	WSC	12L			REGINA
49.	11AE008	POPLAR RIVER AT INTERNATIONAL BOUNDARY	WSC	8Q			REGINA
50.	05NA009	RADVILLE INDEX RESERVOIR	WSC	8L			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
F3 - INTERNATIONAL WATERS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
51.	11AB058	RICHARDSON DITCH NEAR CONSUL	WSC	8Q			REGINA
52.	05NB016	ROUGHBARK RESERVOIR NEAR VEYBURN	WSC	8L			REGINA
53.	11AB020	SHEPHERD DITCH NEAR CONSUL	WSC	8Q			REGINA
54.	05NB021	SHORT CREEK NEAR ROCHE PERCEE	WSC	12Q			REGINA
55.	05ND001	SOURIS RIVER NEAR GLEN EVEN	WSC	12Q	X		REGINA
56.	05ND007	SOURIS RIVER NEAR SHERWOOD	WSC	12Q			REGINA
57.	11AB060	SPANGLER DITCH NEAR GOVENLOCK	WSC	8Q			REGINA
58.	11AB103	SQUAW COULEE NEAR WILLOW CREEK	WSC	8Q			REGINA
59.	05NB018	TATAGWA LAKE DRAIN NEAR VEYBURN	WSC	8Q			REGINA
60.	11AC068	VAL MARIE PUMP NO. 1	WSC	9Q			REGINA
61.	11AB084	VIDORA DITCH NEAR CONSUL	WSC	8Q			REGINA
62.	05NB024	VEYBURN INDEX RESERVOIR	WSC	8L			REGINA
63.	05NB011	YELLOW GRASS DITCH NEAR YELLOW GRASS	WSC	8Q			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
F3 - INTERNATIONAL WATERS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
INTERNATIONAL				
	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	36	0.75	27.00
	12Q	8	1.00	8.00
TOTAL		63		40.35
GRAND TOTAL		63		40.35

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
F4 - NATIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	06CA004	BIGSTONE LAKE NEAR LA RONGE	WSC	12L			PRINCE ALBERT
2.	05KC001	CARROT RIVER NEAR SMOKY BURN	WSC	12Q			PRINCE ALBERT
3.	07LC002	CHIPMAN RIVER ABOVE BLACK LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
4.	06CD002	CHURCHILL RIVER ABOVE OTTER RAPIDS	WSC	12Q			PRINCE ALBERT
5.	06BB003	CHURCHILL RIVER NEAR PATUANAK	WSC	12Q		REMOTE	PRINCE ALBERT
6.	07CD006	CLEARWATER RIVER AT OUTLET OF LLOYD LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
7.	07LD001	CREE LAKE AT CABLE BAY	WSC	12L		REMOTE	PRINCE ALBERT
8.	07LD002	CREE RIVER AT OUTLET OF WAPATA LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
9.	06BA002	DILLON RIVER AT OUTLET OF DILLON LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
10.	07LE002	FOND DU LAC RIVER AT OUTLET OF BLACK LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
11.	06DA004	GEIKIE RIVER BELOW WHEELER RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
12.	07LE003	GREASE RIVER BELOW FONTAINE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
13.	06BD001	HAULTAIN RIVER ABOVE NORBERT RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
14.	07MB001	MACFARLANE RIVER AT OUTLET OF DAVY LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
15.	06CA001	MONTREAL RIVER AT OUTLET OF BIGSTONE LAKE	WSC	12Q			PRINCE ALBERT
16.	05GG001	NORTH SASKATCHEWAN RIVER AT PRINCE ALBERT	WSC	12Q	X		PRINCE ALBERT
17.	05KJ014	PASQUIA RIVER AT HIGHWAY NO. 9	WSC	8Q			PRINCE ALBERT
18.	07LC003	PORCUPINE RIVER AT OUTLET OF GROVE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
19.	05HN001	SOUTH SASKATCHEWAN RIVER AT ST. LOUIS	WSC	12Q			PRINCE ALBERT
20.	05HD036	SWIFT CURRENT CREEK BELOW ROCK CREEK	WSC	12Q			REGINA
21.	06DA001	WOLLASTON LAKE AT ROSS CHANNEL	WSC	12L		REMOTE	PRINCE ALBERT

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
F4 - NATIONAL WATER QUANTITY INVENTORY
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	2	0.40	0.80
	8Q	0	0.75	0.00
	12Q	11	1.00	11.00
TOTAL		13		11.80
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	1	0.75	0.75
	12Q	6	1.00	6.00
TOTAL		8		7.15
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		21		18.95

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
FP1 - FEDERAL-PROVINCIAL AGREEMENTS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		0		0.00

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
FP2 - RIVER BASIN MANAGEMENT

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05KG003	AMISK LAKE NEAR FLIN FLON	WSC	12L			PRINCE ALBERT
2.	05JE005	AVONLEA CREEK NEAR ROULEAU	WSC	8Q			REGINA
3.	05KH002	CUMBERLAND LAKE NEAR CUMBERLAND HOUSE	WSC	12L			PRINCE ALBERT
4.	05JG015	KNOX COULEE NEAR TUXFORD	WSC	8Q			REGINA
5.	06CB001	LAC LA RONGE AT LA RONGE	WSC	12L			PRINCE ALBERT
6.	06CA006	MONTREAL LAKE NEAR VETAKVIN	WSC	12L			PRINCE ALBERT
7.	06CA003	MONTREAL RIVER AT HIGHWAY NO. 2	WSC	12Q			PRINCE ALBERT
8.	05JE004	MOOSE JAW RIVER NEAR ROULEAU	WSC	8Q			REGINA
9.	05NC001	MOOSE MOUNTAIN CREEK BELOW MOOSE MOUNTAIN LAKE	WSC	8Q			REGINA
10.	05NE002	MOOSOMIN LAKE NEAR MOOSOMIN	WSC	8L			REGINA
11.	05JB001	MOTUKEU CREEK NEAR VANGUARD	WSC	8Q			REGINA
12.	05NE001	PIPESTONE CREEK NEAR MOOSOMIN	WSC	8Q			REGINA
13.	05KH009	SASKATCHEWAN RIVER OLD CHANNEL	WSC	12Q			PRINCE ALBERT
14.	05NB009	SOURIS RIVER NEAR ROCHE PERCEE	WSC	8Q			REGINA
15.	05HG001	SOUTH SASKATCHEWAN RIVER AT SASKATOON	WSC	12Q			REGINA
16.	05KG007	STURGEON-WEIR RIVER AT LEAF RAPIDS	WSC	12Q			PRINCE ALBERT
17.	05HD041	SWIFT CURRENT CREEK BELOW REID LAKE	WSC	12Q			REGINA
18.	07QC002	TAZIN LAKE NEAR OUTLET	WSC	12L		REMOTE	PRINCE ALBERT
19.	05NB009	THEODORE RESERVOIR NEAR THEODORE	WSC	8L			REGINA
20.	05JF012	VASCANA CREEK BELOW KRONAU MARSH	WSC	8Q			REGINA
21.	05JF015	VASCANA LAKE AT MARINA	WSC	12L			REGINA
22.	05NB008	WHITESAND RIVER NEAR SPRINGSIDE	WSC	8Q			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
FP2 - RIVER BASIN MANAGEMENT
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	1	0.40	0.40
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		1		0.40
NORMAL ACCESS				
	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	9	0.75	6.75
	12Q	5	1.00	5.00
TOTAL		21		14.25
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		22		14.65

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	06AD011	ALCOTT CREEK ABOVE MEADOW LAKE	WSC	8Q			PRINCE ALBERT
2.	05HC005	ANTELOPE CREEK NEAR CABRI	WSC	8Q			REGINA
3.	05HF010	ANTLER RIVER NEAR WAUCHOPE	WSC	8Q	X		REGINA
4.	05JH001	ARM RIVER NEAR BETHUNE	WSC	8Q			REGINA
5.	05HC001	ASSINIBOINE RIVER AT STURGIS	WSC	8Q			REGINA
6.	05KF001	BALLANTYNE RIVER ABOVE BALLANTYNE BAY	WSC	12Q			PRINCE ALBERT
7.	05FF001	BATTLE RIVER AT BATTLEFORD	WSC	8Q	X		PRINCE ALBERT
8.	05HA003	BEAR CREEK NEAR PIAPOT	WSC	8Q			REGINA
9.	06AG001	BEAVER RIVER BELOW WATERHEN RIVER	WSC	12Q			PRINCE ALBERT
10.	06AD001	BEAVER RIVER NEAR DORINTOSH	WSC	12Q	X		PRINCE ALBERT
11.	05EF005	BIG GULLY CREEK NEAR MAIDSTONE	WSC	8Q	X		PRINCE ALBERT
12.	05HA011	BIRCH CREEK NEAR ELFROS	WSC	8Q			REGINA
13.	05EG006	BIRLING CREEK NEAR PAYNTON	WSC	8Q			PRINCE ALBERT
14.	05HA015	BRIDGE CREEK AT GULL LAKE	WSC	8Q			REGINA
15.	05HG002	BRIGHTWATER CREEK NEAR KENASTON	WSC	8Q			REGINA
16.	05KB005	BURNTOUT BROOK NEAR ARBORFIELD	WSC	8Q	X		PRINCE ALBERT
17.	06BB005	CANOE RIVER NEAR BEAUVAL	WSC	12Q		REMOTE	PRINCE ALBERT
18.	05KB003	CARROT RIVER NEAR ARMLEY	WSC	8Q	X		PRINCE ALBERT
19.	06BA001	CHURCHILL LAKE AT BUFFALO NARROWS	WSC	12L		REMOTE	PRINCE ALBERT
20.	05JF011	COTTONWOOD CREEK NEAR LUMSDEN	WSC	8Q	X		REGINA
21.	05HF014	CREIGHTON TRIBUTARY NEAR TOTNES	WSC	8Q			REGINA
22.	05HH002	CROMARTY CREEK NEAR BIRCH HILLS	WSC	8Q			PRINCE ALBERT
23.	05HB006	CROOKED HILL CREEK NEAR CANORA	WSC	8Q			REGINA
24.	05EG004	CRYSTAL CREEK NEAR IFFLEY	WSC	8Q			PRINCE ALBERT
25.	05JH015	CUTARM CREEK NEAR SPY HILL	WSC	8Q			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
26.	07CD007	DESCHARME RIVER BELOW DUPRE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
27.	06AG002	DORE RIVER NEAR THE MOUTH	WSC	12Q		REMOTE	PRINCE ALBERT
28.	07MA003	DOUGLAS RIVER NEAR CLUFF LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
29.	05GC006	EAGLE CREEK NEAR ENVIRON	WSC	8Q	X		REGINA
30.	05LB002	ETOMAMI RIVER NEAR BERTVELL	WSC	8Q	X		PRINCE ALBERT
31.	05GA007	ETHEHILL CREEK NEAR MACKLIN	WSC	8Q			PRINCE ALBERT
32.	05LB007	FIR RIVER NEAR HUDSON BAY	WSC	12Q			PRINCE ALBERT
33.	06CE001	FOSTER RIVER ABOVE CHURCHILL RIVER	WSC	12Q		REMOTE	PRINCE ALBERT
34.	05NF013	GAINSBOROUGH CREEK NEAR STORTHOAKS	WSC	8Q			REGINA
35.	05GG010	GARDEN RIVER NEAR HENRIBOURG	WSC	8Q			PRINCE ALBERT
36.	05MA005	GIBSON CREEK NEAR RADVILLE	WSC	8Q			REGINA
37.	05KA009	GOOSEHUNTING CREEK NEAR BEATTY	WSC	8Q			PRINCE ALBERT
38.	11AE010	HAY MEADOW CREEK NEAR LISIEUX	WSC	8Q			REGINA
39.	05MA012	IRONSPRING CREEK NEAR WATSON	WSC	8Q			REGINA
40.	05JG014	ISKWAO CREEK NEAR CRAIK	WSC	8Q			REGINA
41.	05NB014	JEWEL CREEK NEAR GOODWATER	WSC	8Q			REGINA
42.	05JK004	JUMPING DEER CREEK NEAR LIPTON	WSC	8Q			REGINA
43.	06BB004	KEELEY RIVER AT OUTLET OF KEELEY LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
44.	05HH003	KOHLESCHMIDT CREEK NEAR ROSTHERN	WSC	8Q			PRINCE ALBERT
45.	05JD004	LAKE OF THE RIVERS WEST INFLOW	WSC	8Q			REGINA
46.	05JJ003	LANIGAN CREEK ABOVE BOULDER LAKE	WSC	8Q			REGINA
47.	05KB006	LEATHER RIVER NEAR STAR CITY	WSC	8Q			PRINCE ALBERT
48.	05JH005	LEVIS CREEK NEAR IMPERIAL	WSC	8Q			REGINA
49.	05NF006	LIGHTNING CREEK NEAR CARNDUFF	WSC	8Q			REGINA
50.	05MC003	LILIAN RIVER NEAR LADY LAKE	WSC	8Q			REGINA

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SCHEDULE A

SASKATCHEVAN WATER QUANTITY STATIONS
1988-89
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
51.	05LB004	LOISELLE CREEK NEAR HUDSON BAY	WSC	8Q			PRINCE ALBERT
52.	05MA004	LONG CREEK NEAR MAXIM	WSC	8Q			REGINA
53.	05MF005	MACDONALD CREEK NEAR BOUNTY	WSC	8Q			REGINA
54.	05MA021	MAGNUSSON CREEK NEAR WYNYARD	WSC	8Q			REGINA
55.	06AD007	MAKWA RIVER AT RAPID VIEW	WSC	8Q			PRINCE ALBERT
56.	05LE011	MALONECK CREEK NEAR PELLY	WSC	8Q			REGINA
57.	05JA003	MCDONALD CREEK NEAR MCCORD	WSC	8Q	X		REGINA
58.	05MF015	MCDONALD TRIBUTARY NEAR TOTNES	WSC	8Q			REGINA
59.	05EF004	MONNERY RIVER NEAR PARADISE HILL	WSC	8Q			PRINCE ALBERT
60.	05JE001	MOOSE JAW RIVER ABOVE THUNDER CREEK	WSC	8Q			REGINA
61.	05ND004	MOOSE MOUNTAIN CREEK NEAR OXBOW	WSC	8Q	X		REGINA
62.	05JB007	MOSQUITO CREEK NEAR PAMBRUN	WSC	8Q			REGINA
63.	06BC001	MUDJATIK RIVER NEAR FORCIER LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
64.	05JB004	NOTUKEU CREEK ABOVE ADMIRAL RESERVOIR	WSC	8Q			REGINA
65.	05GD002	OSCAR CREEK NEAR KRYDOR	WSC	8Q			PRINCE ALBERT
66.	07LE004	OTHERSIDE RIVER AT OUTLET OF MERCREDI LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
67.	06EA007	PAGATO RIVER AT OUTLET OF PAGATO LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
68.	05JL005	PHEASANT CREEK NEAR ABERNETHY	WSC	8Q	X		REGINA
69.	05JA004	PINTO CREEK NEAR WOODROW	WSC	8Q			REGINA
70.	07LD003	PIPESTONE RIVER BELOW ROTARIU LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
71.	05MA020	QUILL CREEK NEAR QUILL LAKE	WSC	8Q			REGINA
72.	05MA025	RANCH CREEK ABOVE RANCH LAKE	WSC	8Q			REGINA
73.	05LB005	RED DEER RIVER NEAR STEEN	WSC	8Q			PRINCE ALBERT
74.	05JJ009	SALINE CREEK NEAR NOKOMIS	WSC	8Q			REGINA
75.	05LB006	SHAND CREEK NEAR DILLABOUGH	WSC	8Q			PRINCE ALBERT

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
76.	05GF001	SHELL BROOK NEAR SHELLBROOK	WSC	8Q			PRINCE ALBERT
77.	05NE007	SMITH CREEK NEAR MARCHWELL	WSC	8Q			REGINA
78.	06CC001	SMOOTHSTONE RIVER BELOW EMMELINE LAKE	WSC	12Q			PRINCE ALBERT
79.	05NE001	SNAKEBITE CREEK NEAR BEECHY	WSC	8Q			REGINA
80.	05NB017	SOURIS RIVER NEAR HALBRITE	WSC	8Q	X		REGINA
81.	05NB007	SPIRIT CREEK NEAR BUCHANAN	WSC	8Q			REGINA
82.	05ND010	STONY CREEK NEAR KAMSACK	WSC	8Q			REGINA
83.	05NC002	STONY CREEK NEAR STENEN	WSC	8Q			REGINA
84.	05GF002	STURGEON RIVER NEAR PRINCE ALBERT	WSC	8Q	X		PRINCE ALBERT
85.	05KG002	STURGEON-WEIR RIVER AT OUTLET OF AMISK LAKE	WSC	12Q			PRINCE ALBERT
86.	05LE008	SWAN RIVER NEAR NORQUAY	WSC	12Q	X		REGINA
87.	05ND039	SWIFT CURRENT CREEK NEAR LEINAN	WSC	12Q	X		REGINA
88.	05JG012	THUNDER CREEK NEAR DARMODY	WSC	8Q			REGINA
89.	06DB003	THYME HILL RIVER BELOW MACKENZIE LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
90.	05KE002	TORCH RIVER NEAR LOVE	WSC	12Q			PRINCE ALBERT
91.	05EG005	TURTLELAKE RIVER NEAR TURTLEFORD	WSC	8Q			PRINCE ALBERT
92.	05JF004	VASCANA CREEK NEAR SEDLEY	WSC	8Q			REGINA
93.	07LB001	VATERBURY LAKE AT CREW CABIN	WSC	12L		REMOTE	PRINCE ALBERT
94.	07LB002	VATERFOUND RIVER BELOW UNKNOWN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
95.	06AF005	VATERHEN RIVER NEAR GOODSOIL	WSC	12Q			PRINCE ALBERT
96.	06DC001	VATHAMAN RIVER BELOW VATHAMAN LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
97.	06DA005	VHEELER RIVER BELOV RUSSELL LAKE	WSC	12Q		REMOTE	PRINCE ALBERT
98.	05KE005	VHITE FOX RIVER NEAR GARRICK	WSC	9Q			PRINCE ALBERT
99.	05NB003	VHITESAND RIVER NEAR CANORA	WSC	8Q			REGINA
100.	07HA004	VILLIAM RIVER ABOVE CARSVELL RIVER	WSC	12Q		REMOTE	PRINCE ALBERT

SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
FP3 - REGIONAL WATER QUANTITY INVENTORY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
101.	05NB005	WILLOW BROOK AT WILLOWBROOK	WSC	CO			REGINA
102.	05JA002	WOOD RIVER NEAR LAFLECHE	WSC	CO	X		REGINA
103.	05NB001	TORNTON CREEK NEAR EBENEZER	WSC	CO			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
FP3 - REGIONAL WATER QUANTITY INVENTORY
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	2	0.40	0.80
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
TOTAL		17		15.80
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	76	0.75	57.00
	12Q	10	1.00	10.00
TOTAL		86		67.00
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		103		82.80

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05HA010	BIG QUILL LAKE NEAR KANDAHAR	SWC	BL			REGINA
2.	05KF004	BIG SANDY LAKE ON THE HANSON LAKE ROAD	SWC	BL			REGINA
3.	05EG010	BRIGHTSAND LAKE NEAR ST WALBURG	SWC	BL			REGINA
4.	05JE009	BROKENSHELL CREEK NEAR TROSSACHS	WSC	BQ			REGINA
5.	05KE008	CANDLE LAKE AT CANDLE LAKE	WSC	BL			PRINCE ALBERT
6.	05KA001	CARROT RIVER NEAR KINISTINO	WSC	BQ			PRINCE ALBERT
7.	06AD012	CHITEK LAKE AT CHITEK VILLAGE	SWC	BL			REGINA
8.	05GG009	CHRISTOPHER LAKE NEAR CHRISTOPHER LAKE	SWC	BL			REGINA
9.	05MC004	CONJURING CREEK NEAR PREECEVILLE	WSC	BQ			REGINA
10.	06AE002	COVAN LAKE NEAR HONEYMOON POINT	SWC	BL			REGINA
11.	05FF003	CUTKNIFE CREEK NEAR CUTKNIFE	WSC	BQ			PRINCE ALBERT
12.	06AE004	DELARONDE LAKE NEAR BIG RIVER	SWC	BL			REGINA
13.	05KF003	DESCHAMBAULT LAKE ON THE HANSON LAKE ROAD	SWC	BL			REGINA
14.	05KB011	DOGHIDE RIVER NEAR RUNCIMAN	WSC	BQ	X		PRINCE ALBERT
15.	06AG003	DORE LAKE AT DORE LAKE	SWC	BL			REGINA
16.	05LA003	DUCK CREEK NEAR KELVINGTON	WSC	BQ			PRINCE ALBERT
17.	05GC002	EAGLE CREEK NEAR ANGLIA	WSC	BQ			REGINA
18.	05JK008	ECHO CREEK AT FORT QU'APPELLE	WSC	BQ			REGINA
19.	05GG006	EMMA LAKE NEAR TWEEDSMUIR	SWC	BL			REGINA
20.	05EF006	ENGLISHMAN RIVER NEAR SPRUCE LAKE	WSC	BQ			PRINCE ALBERT
21.	11AE016	FIFE LAKE NEAR LISIEUX	WSC	BL			REGINA
22.	05MB013	FISHING LAKE NEAR WADENA	SWC	BL			REGINA
23.	05JC007	FLOVING WELL WEST INFLOW NEAR FLOVING WELL	WSC	BQ	X		REGINA
24.	05MB010	GOOD SPIRIT LAKE NEAR CANORA	SWC	BL			REGINA
25.	05LB011	GREENWATER LAKE NEAR CHELAN	SWC	BL			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
26.	06AF010	GREIG LAKE NEAR DORINTOSH	SWC	8L			REGINA
27.	05JF014	HUNTER CREEK NEAR RICHARDSON	WSC	8Q			REGINA
28.	05HG021	INVERNESS CREEK NEAR BRODERICK	WSC	8Q			REGINA
29.	05EG003	JACKFISH LAKE NEAR COCHIN	WSC	8L			PRINCE ALBERT
30.	05KG010	JAN LAKE NEAR THE HANSON LAKE ROAD	SWC	8L			REGINA
31.	05KE007	KELSEY CREEK NEAR GARRICK	WSC	8Q			PRINCE ALBERT
32.	05ND009	KENOSEE LAKE NEAR CARLYLE	WSC	8L			REGINA
33.	05LA007	KIPABISKAU LAKE NEAR MCKAGUE	SWC	8L			REGINA
34.	06AF009	LAC DES ILES NEAR GOODSOIL	SWC	8L			REGINA
35.	05HD028	LAC PELLETIER NEAR VESPER	WSC	8L			REGINA
36.	05HC004	LAKE DIEFENBAKER AT SASKATCHEWAN LANDING	WSC	8L			REGINA
37.	05KA011	LENORE LAKE NEAR MIDDLE LAKE	SWC	8L			REGINA
38.	05KF002	LITTLE BEAR LAKE ON THE HANSON LAKE ROAD	SWC	8L			REGINA
39.	05KB008	LITTLE BRIDGE CREEK NEAR ARMLEY	WSC	8Q			PRINCE ALBERT
40.	05MA002	LITTLE QUILL LAKE NEAR WYNYARD	SWC	8L			REGINA
41.	05KE009	LOWER FISHING LAKE ON THE HANSON LAKE ROAD	SWC	8L			REGINA
42.	05LB008	MACNAB CREEK NEAR SONNE	WSC	8Q			PRINCE ALBERT
43.	05LE012	MADGE LAKE NEAR KAMSACK	SWC	8L			REGINA
44.	06AD014	MAKWA LAKE NEAR LOON LAKE	SWC	8L			REGINA
45.	06AD009	MAKWA RIVER AT OUTLET OF MAKWA LAKE	WSC	8Q			PRINCE ALBERT
46.	05GA006	MANITO LAKE NEAR MARSDEN	SWC	8L			REGINA
47.	05LB012	MAREAN LAKE NEAR CHELAN	SWC	8L			REGINA
48.	06AD010	MEADOW RIVER BELOW MEADOW LAKE	WSC	12Q			PRINCE ALBERT
49.	05MA023	MILLIGAN CREEK NEAR VADENA	WSC	8Q			REGINA
50.	05JE002	MOOSE JAW RIVER NEAR LANG	WSC	8Q			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
51.	06AD008	MORIN CREEK NEAR MEADOW LAKE	WSC	8Q			PRINCE ALBERT
52.	06AE003	MORIN LAKE NEAR VICTOIRE	SWC	8L			REGINA
53.	05GB004	MUDDY LAKE INFLOW NEAR REVENUE	WSC	8Q			PRINCE ALBERT
54.	06CB003	NEMEIBEN LAKE NEAR LA RONGE	SWC	8L			REGINA
55.	06AE001	NORBURY CREEK NEAR SPIRITWOOD	WSC	8Q			PRINCE ALBERT
56.	05GC007	OPUNTIA LAKE WEST INFLOW	WSC	8Q			REGINA
57.	05LD003	OVERFLOWING RIVER NEAR HUDSON BAY	WSC	8Q			PRINCE ALBERT
58.	05KG009	PELICAN LAKE AT PELICAN NARROWS	SWC	8L			REGINA
59.	05LA004	PIPESTONE CREEK NEAR ROSE VALLEY	WSC	8Q			PRINCE ALBERT
60.	05LB010	PRAIRIE RIVER NEAR PRAIRIE RIVER	WSC	8Q			PRINCE ALBERT
61.	05MA024	RANCH LAKE NEAR ST JAMES	SWC	8L			REGINA
62.	05LA005	RED DEER RIVER NEAR ARCHERVILL	WSC	8Q			PRINCE ALBERT
63.	05GD003	REDBERRY LAKE NEAR KRYDOR	SWC	8L			REGINA
64.	05MA016	ROMANCE CREEK NEAR WATSON	WSC	8Q			REGINA
65.	05JG001	SANDY CREEK NEAR CARON	WSC	8Q			REGINA
66.	05GF004	SHELL LAKE NEAR SHELL LAKE	SWC	8L			REGINA
67.	05HC003	SNIPE LAKE NORTH INFLOW	WSC	8Q			REGINA
68.	05NB031	SOURIS RIVER NEAR BECHARD	WSC	8Q			REGINA
69.	05NB030	SOURIS RIVER NEAR MCTAGGART	WSC	8Q			REGINA
70.	05HF004	SOUTH SASKATCHEWAN RIVER BELOW GARDINER DAM	WSC	12L			REGINA
71.	05GF003	STURGEON LAKE NEAR PRINCE ALBERT	SWC	8L			REGINA
72.	05EG009	TURTLE LAKE NEAR GLASLYN	SWC	8L			REGINA
73.	05HF022	UNNAMED CREEK NEAR CUTBANK	WSC	8Q			REGINA
74.	05KA012	WAKAW LAKE NEAR WAKAW	SWC	8L			REGINA
75.	05KA010	WALDSEA LAKE NEAR HUMBOLDT	SWC	8L			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	SEDIMENT	ACCESS	OPERATIONS CENTER
76.	06AF007	VATERHEN LAKE NEAR DORINTOSH	SVC	8L			REGINA
77.	05ND008	VHITE BEAR (CARLYLE) LAKE NEAR CARLYLE	VSC	8L			REGINA
78.	05JC006	VIVA CREEK NEAR ST. BOSVELLS	VSC	8Q			REGINA
79.	05MB014	YORK LAKE NEAR YORKTON	SVC	8L			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
P1 - PROVINCIAL DEPARTMENTAL PROGRAMS
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	7	0.25	1.75
	12L	1	0.40	0.40
	8Q	33	0.75	24.75
	12Q	1	1.00	1.00
TOTAL		42		27.90
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		42		27.90

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SCHEDULE A

SASKATCHEVAN WATER QUANTITY STATIONS
1988-89
P2 - SPECIFIC PURPOSE MONITORING

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	ACCESS	OPERATIONS CENTER
1.	05HG006	BRIGHTWATER RESERVOIR AT RIPARIAN OUTLET	WSC	8L			REGINA
2.	05HF017	BRODERICK RESERVOIR AT WEST EMBANKMENT	WSC	8L			REGINA
3.	06EA010	CHURCHILL RIVER ABOVE MAPLE LEAF RAPIDS	WSC	12Q		REMOTE	PRINCE ALBERT
4.	06EA011	CHURCHILL RIVER ABOVE WINTEGO RAPIDS	WSC	12Q		REMOTE	PRINCE ALBERT
5.	05KD006	CODETTE RESERVOIR ABOVE THE SPILLWAY	WSC	12L			PRINCE ALBERT
6.	11AE014	EAST POPLAR RIVER ABOVE COOKSON RESERVOIR	WSC	8Q			REGINA
7.	11AE015	GIRARD CREEK NEAR CORONACH	WSC	8Q			REGINA
8.	05HG003	PIKE LAKE NEAR SASKATOON	SWC	8L			REGINA
9.	05JB006	RUSSELL CREEK RESERVOIR	WSC	8L			REGINA
10.	05HG019	S.S.E.P. EAST MAIN CANAL BELOW BRODERICK RESERVOIR	WSC	8Q			REGINA
11.	05JE008	WILCOX MAIN DITCH NEAR WILCOX	WSC	8Q			REGINA
12.	05JC005	WOOD RIVER DIVERSION TO CHAPLIN LAKE	WSC	8Q			REGINA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
P2 - SPECIFIC PURPOSE MONITORING
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	2	1.00	2.00
TOTAL		2		2.00
NORMAL ACCESS				
	8L	3	0.25	0.75
	12L	1	0.40	0.40
	8Q	5	0.75	3.75
	12Q	0	1.00	0.00
TOTAL		9		4.90
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		11		6.90

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
DATA CONTRIBUTED BY SASKATCHEVAN
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		0		0.00

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
1988-89
DATA CONTRIBUTED BY OTHER AGENCY

ITEM NO.	STATION NUMBER	STATION NAME	OPERATING AGENCY	RECORD OBTAINED HYDROMETRIC	RECORD OBTAINED SEDIMENT	RECORD OBTAINED ACCESS	OPERATIONS CENTER
1.	11AE009	ROCK CREEK BELOW HORSE CREEK NEAR INTERNATIONAL BOUNDARY	USGS	12Q			HELENA

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SCHEDULE A

SASKATCHEWAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
1988-89
DATA CONTRIBUTED BY OTHER AGENCY
UNIT SUMMARY

	TYPE	NO. OF STATIONS	CONVERSION	UNITS
REMOTE ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
NORMAL ACCESS				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
INTERNATIONAL				
	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	0	1.00	0.00
TOTAL		0		0.00
GRAND TOTAL		0		0.00

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SCHEDULE A

SASKATCHEVAN WATER QUANTITY STATIONS
STATIONS OPERATED BY WATER SURVEY OF CANADA
STATION CLASSIFICATION - TYPE - UNITS SUMMARY
1988-89

CLASSIFICATION	TYPE	NO. OF STATIONS	CONVERSION	UNITS
FEDERAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	13	1.00	13.00
		16		14.20
NORMAL ACCESS	8L	8	0.25	2.00
	12L	11	0.40	4.40
	8Q	18	0.75	13.50
	12Q	23	1.00	23.00
		60		42.90
INTERNATIONAL	8L	15	0.25	3.75
	12L	4	0.40	1.60
	8Q	36	0.75	27.00
	12Q	8	1.00	8.00
		63		40.35
TOTAL		139		97.45
FEDERAL-PROVINCIAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	3	0.40	1.20
	8Q	0	0.75	0.00
	12Q	15	1.00	15.00
		18		16.20
NORMAL ACCESS	8L	2	0.25	0.50
	12L	5	0.40	2.00
	8Q	85	0.75	63.75
	12Q	15	1.00	15.00
		107		81.25
TOTAL		125		97.45
PROVINCIAL				
REMOTE ACCESS	8L	0	0.25	0.00
	12L	0	0.40	0.00
	8Q	0	0.75	0.00
	12Q	2	1.00	2.00
		2		2.00
NORMAL ACCESS	8L	10	0.25	2.50
	12L	2	0.40	0.80
	8Q	38	0.75	28.50
	12Q	1	1.00	1.00
		51		32.80
TOTAL		53		34.80
GRAND TOTAL		317		229.70

7.3 SCHEDULE B: ANNUAL PAYMENTS - ITEMS TO BE INCLUDED

The items to be included in computing the annual payments of water quantity survey stations are:

I OPERATIONAL COST WATER QUANTITY SURVEY STATIONS EXCLUDING SEDIMENT

a) Salaries and overtime of field personnel and casual labour;

b) Field travel expenses, board and lodging costs for field personnel;

c) The computer costs associated with computing daily mean hydrometric data;

d) Observer pay;

e) Depreciation, operation and maintenance of vehicles and boats

f) Maintenance of gauging station structures including material and labour for minor repairs;

g) Maintenance and depreciation of all field equipment and instruments (except as noted in Article VII of this agreement);

h) Fuels such as propane for heating recorder installations and gas such as nitrogen for operating pressure sensing equipment, electricity charges;

i) Rental of aircraft, vehicles, boats, etc. supplied by either party or chartered;

j) The annual cost of land leases;

k) Services, e.g. cost of establishing gas caches, operation of line cabins, etc.

II OPERATIONAL COST SEDIMENT STATIONS

All items in I OPERATIONAL COST plus:

l) The computer costs associated with computing daily mean sediment data;

m) Cost of analysis of sediment samples.

III NEW CONSTRUCTION REPAIR AND MAJOR RECONSTRUCTION COSTS FOR WATER QUANTITY SURVEY STATIONS;

a) Salaries and overtime of construction personnel;

b) Field travel expenses, board and lodging costs of construction personnel;

c) Depreciation, operation and maintenance of vehicles;

d) Construction materials;

e) Maintenance, depreciation and operation of construction equipment;

f) Rental of aircraft, vehicles, boats, construction equipment, etc. supplied by either party or chartered;

g) Land acquisition costs including legal survey costs;

h) Construction contract payments.

7.4 SCHEDULE C: PROCEDURES FOR PREPARATION OF ANNUAL PAYMENTS

a) The annual payment is composed of two parts; the annual operating costs and the costs of construction for streamflow and water level installations and sediment installations.

b) The annual payment shall be computed for each year the agreement is in effect.

c) Cost data to be used as a basis for computing each annual payment will be the cost data from the latest available full fiscal year.

d) A cost index factor is to be used in computing the annual payment for the year in question commensurate with sound engineering practice.

e) The average annual unit costs for operating water quantity survey stations listed in Schedule A but not including sediment stations will be determined from the cost data of c) above and where necessary, because of significant differences in transporation costs, these average annual unit costs will be computed for more than one area or condition of operation.

f) The total annual operation cost of the water quantity survey station listed in Schedule A but not including sediment stations will be the summation of the appropriate average annual unit cost for each station multiplied by the cost index factor as determined in item d) above.

g) The total annual operation cost of the sediment stations listed in Schedule A will be the summation of the annual operating cost for each station multiplied by the cost index factor as determined in item d) above.

h) The construction cost to be apportioned in accordance with Articles II, III and IV will be the summation of the construction cost for each new, or reconstructed water quantity survey station. The entire cost of construction is to be included in the annual payment. Construction costs are to be determined using data from reconnaissance surveys, standard plans, etc. and incorporating and cost index factor from item d) above.

i) In cases where there is a significant deviation between the cost determined in f), g) and h) and actual costs because of the cost index factor used, or changes in the construction program due to unforeseen circumstances such as flooding, an adjustment may be made in the final quarterly payment (March 1st) or the next fiscal year to more accurately reflect the cost shares of the parties to this agreement.

7.5 SCHEDULE D: 1988-89

Schedule D to the Memorandum of Agreement is determined jointly by the Co-ordinating Committee Members for Saskatchewan and Canada and signed prior to April 1 of each year by the Administrators for Saskatchewan and Canada. This Schedule provides a summary of the annual payment to be made by the province and is included in this section.

SCHEDULE D - MEMORANDUM OF AGREEMENT

SASKATCHEWAN HYDROMETRIC SURVEYS

1988-89

This schedule is a summary of the annual payment. The details of the calculations for operation and construction costs are available and have been jointly reviewed by the officers of each party.

ANNUAL PAYMENT FOR 1988-89 TO BE PAID TO CANADA BY SASKATCHEWAN

		Operation	Construction*	Total
a)	Streamflow and water level installations	419 000	73 000	492 000
b)	Sediment installations	1 000	-	1 000
	Total	420 000	73 000	493 000

*Saskatchewan's share includes $36 000 for work to be done for Saskatchewan Power Corporation and paid for by SPC through Saskatchewan Water Corporation

D.L. MacLeod
Vice President
Resource Management
Saskatchewan Water Corporation
Administrator for Saskatchewan

R.A. Halliday
Regional Director
Inland Waters Directorate
Administrator for Canada

APPENDIX E

STATION CHANGES TO 1988-89 SCHEDULE A AND COMPUTATION OF 1989-90 SCHEDULE D

8.1 CHANGES TO SCHEDULE A - SASKATCHEWAN FROM 1988-89 TO 1989-90

STATIONS ADDED TO THE NETWORK

	Station Name	Station Number	Record	Designation
1.	Abitau River above Cuming Lake	07EQC005	12Q	P2
2.	Crean Lake at the Warden Station	06CA008	8L	F1
3.	Denniel Creek East Tributary near Val Marie	11AC073	8Q	F3
4.	Frenchman River at 50-Mile	11AC023	8Q	F3
5.	Frenchman River below Val Marie	11AC051	8Q	F1
6.	Kingsmere Lake at the Outlet Structure	06CA007	8L	F1
7.	Tazin River above Tazin Lake	07QC006	12Q	P2
8.	Waskesiu Lake at Waskesiu Lake	06CA002	8L	F1

STATION NAME CHANGES

	Station Name	Station Number	To
1.	Pipestone Creek above Moosomin Reservoir	05NE003	Pipestone Creek above Moosomin Lake
2.	Tobin Lake at Squaw Rapids Spillway	05KD004	Tobin Lake at the Spillway
3.	Dillon River at Outlet of Dillon Lake	06BA002	Dillon River below Dillon Lake

8.2 ESTIMATED COST OF SCHEDULE D - SASKATCHEWAN: 1989-90

A Hydrometric

	No. of Stations	No. of Units	Unit* Cost	Approx Total Cost	Provincial Share
Federal					
Normal Access	63	43.65	4 780	208 647	-
Remote Access	16	14.20	8 680	123 256	-
International	66	42.60	5 250	223 650	
Sub Total	145	100.45		555 553	
Federal-Provincial					
Normal Access	107	81.25	4 780	388 375	194 187
Remote Access	18	16.20	8 680	140 616	70 380
Sub Total	125	97.45		528 991	264 495
Provincial					
Normal Access	51	32.80	4 780	156 784	156 784
Remote Access	4	4.00	8 680	34 720	34 720
Sub Total	55	36.80		191 504	191 504
Total	325	234.70		1 276 048	455 995

* Unit cost estimates were determined considering operational plans and salary costs for 1989-90.

B Construction

a) Streamflow and water level stations — Sask Water 12 149; Sask Power 24 851

C Sediment

The 1989 sediment program consists of 1 seasonal station, 4 miscellaneous stations and 23 special event stations.

The provincial share of the program is for laboratory analysis only as the field costs are absorbed by the hydrometric program. The provincial share is $1000.00

D Provincial Share

a) Operating

Hydrometric	455 995	
Sediment	1 000	
Total	456 995	or 457 000

b) Construction

Sask Water Corp	12 149
Sask Power Corp	24 851
Total	37 000

APPENDIX F

NATIONAL GUIDELINES FOR DESIGNATION OF FEDERAL AND PROVINCIAL RESPONSIBILITY FOR WATER QUANTITY SURVEY STATIONS

9.0 NATIONAL GUIDELINES FOR DESIGNATING WATER QUANTITY SURVEY STATIONS

These national guidelines of the Federal-Provincial Memoranda of Agreement for Water Quantity Surveys have been prepared by Canada in consultation with the Provinces for the purpose of designating federal, federal-provincial and provincial water quantity survey stations. In compliance with the agreements, the assignment and review of station designations is the responsibility of each Co-ordinating Committee.

The intent of these guidelines is to provide a uniform and consistent manner for designating water quantity survey stations throughout Canada. In these guidelines, "water quantity survey stations" have the same definition as in the Memoranda of Agreement and include water level, streamflow and sediment survey stations. The word "stations" in these guidelines means "water quantity survey stations". Where not otherwise specified, the word "Province" means "Province" or "Territory". The designation of each sediment station can be considered separately from the corresponding water quantity survey station designation.

FEDERAL STATIONS

These are stations that support programs of primary interest to the Government of Canada. These stations are funded 100 per cent by Canada in accordance with Article II and the procedures described in Schedules B, C and D (F for the Yukon) (and Schedules E, D, and F for Quebec) of the Memoranda of Agreement.

1. Federal Departmental Programs

   These are stations required under statutory obligations that have developed in response to federal legislation and priorities, and as a result of programs of various federal government departments or agencies to provide quantity information on inland waters. These include stations operated in support of specific federal works, benchmark basins, studies or investigations, research projects, and to meet navigational requirements and management responsibilities. A station may be so designated where Canada has formally accepted responsibility for the continued operation of the station under an implementation agreement.

2. Interprovincial Waters

These are stations required for monitoring of waters flowing across or forming part of provincial or territorial boundaries where federal responsibility has been established by an agreement or where justified by an inter-jurisdictional concern.

3. International Waters

These are stations associated with federal responsibilities arising from international agreements, treaties, orders or studies. These include:

(a) Stations specifically named under the Boundary Waters Treaty and those approved officially as "International Gauging Stations".

(b) Stations specifically stipulated under IJC orders, or required to support such orders; to provide for control of waters crossing or forming part of the international boundary and for IJC related study, surveillance, flow regulation or apportionment purposes. Such stations may also be required for similar studies carried out under unilateral or bilateral mechanism and undertaken in anticipation of the need for formal orders.

(c) Stations related to international treaties and agreements which involve waters crossing or forming part of the international boundary and which specifically stipulate the reaches of streams required to be monitored or special arrangements that need to be made to meet water quantity survey needs.

(d) Stations on streams flowing across or forming part of the international boundary for which Canada has determined that monitoring is required for water management purposes.

4. National Water Quantity Inventory

These are stations that provide information for a national inventory of surface waters. They consist of those stations required to determine water quantity trends in the major drainage basins in Canada that serve to provide an assessment of the total surface water resources and to measure significant discharge to the oceans.

FEDERAL-PROVINCIAL AND/OR FEDERAL-TERRITORIAL STATIONS

These are stations that support program of joint interest to Canada and the Province. The construction and operation of these stations are funded in accordance with Article III and procedures described in Schedules B, C and D (F for the Yukon) (and Schedules E, D and F for Quebec) of the Memoranda of Agreement.

1. Federal-Provincial Agreements

These are stations where joint federal and provincial (or territorial) responsibility is established under the terms and conditions of an agreement between Canada and one or more Provinces or Territories.

The joint funding arrangements for any particular agreement must be taken into consideration before designating a station in order to ensure the intended division of financial responsibility. Following the completion of a federal-provincial water study, a station may be designated in this category only if its continuation would be in the joint interest of Canada and the Province.

2. River Basin Management

These are stations where both Canada and the Province have stated an interest in the need for information to support the management of the water resources of a river basin.

3. Regional Water Quantity Inventory

These are stations that provide an assessment of the quantity of water resources available in distinct hydrologic zones within each Province through representative sampling taking into consideration climatic variability, geographic and geologic differences, levels of population and development, basin size, streamflow regime, relationship to major ground water resources and length of record.

PROVINCIAL AND/OR TERRITORIAL STATIONS

These are stations that support programs of primary interest to a Province. They are funded 100 per cent by the Province in accordance with Article IV and procedures described in Schedules B, C and D (F for the Yukon) (and Schedules E, D, and F for Quebec) of the Memoranda of Agreement.

1. Provincial Departmental Programs

These are stations required strictly for provincial programs where water quantity information on inland waters is needed.

2. Specific Purpose Monitoring Requirements

These are stations established as a result of specific requests of provincial/territorial agencies, municipalities, or non-government organizations. All such requests shall be referred to the Province for screening and funding arrangements before being presented to the applicable Coordinating Committee.